S. HRG. 101-363

COASTAL BARRIER RESOURCE SYSTEM

HEARING

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

SEPTEMBER 29, 1989

Printed for the use of the
Committee on Environment and Public Works

U.S. GOVERNMENT PRINTING OFFICE

25-078 WASHINGTON : 1990

For sale by the Superintendent of Documents, Congressional Sales Office
U.S. Government Printing Office, Washington, DC 20402

S321-8

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CONTENTS

OPENING STATEMENTS

	Page
Baucus, Hon. Max, U.S. Senator from the State of Montana	1
Chafee, Hon. John H., U.S. Senator from the State of Rhode Island	2

WITNESSES

Glenn, Hon. John, U.S. Senator from the State of Ohio	3
Keating, David, executive director, National Taxpayers Union	21
Written statement	72
Newsome, Sharon, vice president, National Wildlife Federation	23
Written statement	76
Sheets, Robert, Director, National Hurricane Center	12
Written statement	55
Turner, John F., Director, U.S. Fish and Wildlife Service	6
Written statement	31

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

Coastal Barrier Resources System, Report to Congress, Executive Summary of	117
Heflin, Hon. Howell, U.S. Senator from the State of Alabama, letter to Senator Baucus	29
National Association of Realtors, statement of	98

COASTAL BARRIER RESOURCES SYSTEM

FRIDAY, SEPTEMBER 29, 1989

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:08 a.m., in room 406, Dirksen Senate Office Building, Hon. Max Baucus (chairman of the subcommittee) presiding.

Present: Senators Baucus and Chafee.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. The hearing will come to order.

Good morning, ladies and gentlemen. The Subcommittee on Environmental Protection convenes today to examine the coastal barrier resources system.

This system, which was established by the 1982 Coastal Barrier Resources Act, consists of 186 undeveloped and unprotected areas on the coastal barrier islands that extend from the State of Maine to Texas. Federal expenditures such as highway funds, wastewater treatment grants, and new flood insurance coverage are prohibited within these coastal barrier areas.

The sound premise of the 1982 law is that the Federal Government should not use its resources to support the development of unstable and storm-prone coastal barrier islands because it results in increased loss of life, damage to fisheries and wildlife, and wasteful Federal spending.

Last week, Hurricane Hugo dramatically demonstrated the dangers of increased coastal development.

Our purposes here this morning are two-fold. First, the subcommittee is interested in determining how successful the 1982 Coastal Barrier Resources Law has been in achieving its objective of protection human life and fisheries and wildlife resources and saving Federal dollars. Preventing wasteful Federal expenditures, alone, would justify the law's existence and its expansion.

It is also important for us to know whether we are actually protecting the fisheries and wildlife resources of coastal barriers. That is the key purpose of the law. And if we think it is being fulfilled and it isn't, then the law causes these resources more harm than good by lulling us into complacency.

It is also important to know how successful the law is in achieving its conservation goals, because the law is often cited as a model

for how we should go about conserving other natural resources. We need to verify the model carefully before we replicate it.

The second purpose today is to consider the recommendations made by the Department of the Interior to expand the coastal barrier resources system. Earlier this year, the department submitted its report to Congress required by the 1982 act, which recommends including an additional 790,000 acres along the Atlantic and Gulf coasts in the coastal barrier resources system.

Under a 1988 law sponsored by Senator Glenn, the department has also identified 112 barrier island areas along the shoreline of the Great Lakes that it believes are appropriate for inclusion in this system.

I look forward to hearing Senator Glenn this morning, as well as from other witnesses, and hear what they have to say about the department's recommendations and the implementation of existing law.

Before I turn to Senator Chafee for his opening statement, I want to recognize him as the principal author of the Coastal Barriers Resources Act, and one of the real national leaders in coastal conservation.

Senator Chafee?

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator CHAFEE. Thank you very much, Mr. Chairman.

Indeed, I was deeply involved with this in 1982, and we have appreciated the splendid support that you have given to this legislation through every stage of its proceedings.

I am also delighted that you scheduled this hearing today so that we can take a look at the Act, see how it is going, and examine the suggestions from the Department of the Interior regarding the extension of the Act. It has been seven years since it was passed, and it is time we did this.

I'm delighted we're going to hear from Mr. Sheets. I feel as though I know him. I have had breakfast with him over the past eight days as he has made his very pungent remarks about what is going to happen next with the weather.

And, of course, our friend Hugo exposed the vulnerability of the taxpayer when development occurs on those barrier beaches and islands. The price tag is estimated for flood insurance—setting aside the damage that is not covered by flood insurance—but the flood insurance claims, alone, are going to be in the neighborhood of $400 million. The only reserves in the Federal Flood Insurance are $500 million. So we're skating very close to the edge. It is going to take a long time to build up those reserves. I think it points out, once again, that the taxpayer is quite liable to end up holding the bag when we're dealing with the development of barrier beaches and islands and the flood insurance that goes with it.

That's one of the reasons we passed the Barrier Resources Act in 1982. It made no sense to have the Federal Government subsidizing the development of those islands—subsidizing it through Federal money for highways, Federal money for bridges, Federal money for flood insurance, you name it. It was contrary to every effort that

we are trying to undertake around here to preserve those barrier islands and beaches.

Why do we want to preserve them? They are essential for the habitat for fish, shellfish, water fowl, other wildlife. They are important for everybody to enjoy the open spaces and the scenic vistas. They provide wetlands and provide maintenance protection for the mainland, itself, from the destructive forces of the storms.

The Department of the Interior report we are going to be examining recommends the addition of 422 miles of shoreline on the Atlantic and Gulf coasts. In 1982 we brought in 686 miles. That's a lot. This provides for 422 more. Some of it is going to be in the Virgin Islands, Puerto Rico, and, of course, we look forward to Senator Glenn's suggestions regarding the Great Lakes.

I am all for expanding this system. I think it makes common sense to limit, as I mentioned before, Federal assistance to the development of those sensitive areas.

So once again, Mr. Chairman, I am delighted that we are having these hearings. I want to stress that no one is saying that private people can't develop. We, the Federal Government, haven't bought all these lands. All we are saying is that we are not going to have the Federal Government subsidizing that development. If somebody wants to build a house on a barrier beach, that's their business if they own the land and if they meet the local zoning restrictions and codes. But it is certainly not the business of the Federal Government to be assisting that development which we think is contrary to the best interest of the U.S.

Thank you very much.

Senator BAUCUS. Thank you very much, Senator. Again, as the primary author of this act we applaud you and thank you for all the work that you've done in this area.

Our first witness this morning is the Honorable Senator John Glenn, from Ohio. I know you are very interested in this legislation, and have been for some time. It is a privilege and honor to have you here.

STATEMENT OF HON. JOHN GLENN, U.S. SENATOR FROM THE STATE OF OHIO

Senator GLENN. Thank you, Mr. Chairman.

I will be brief this morning, but I do appreciate the opportunity to testify on the expansion of the Coastal Barrier Resources System.

As you have already said, I strongly support inclusion in this system of Great Lakes shoreline that has already been identified by the Department of the Interior as meeting coastal barriers eligibility. We're not trying to put something in here that is outside the normal way we consider the other areas of our major ocean coastal areas.

I support Great Lakes inclusion both as a conservation and as a long-term deficit reduction measure. In the Great Lakes we have what some people have called America's north coast, and it is literally other coast. If you look at the shorelines of the Great Lakes combined, they are greater than our total Atlantic coast clear from Northern Maine down to the tip of Florida. So it is not a small,

inconsequential group of bodies of water we have there; it is a very substantial coastline.

Last year I introduced legislation in the Senate, S. 1955, to include Great Lakes shoreline in the Coastal Barrier Resources System. Congress enacted a version of my bill in public law 100–707 that required the Department of the Interior to map those portions of the Great Lakes that are suitable for inclusion in the system. We looked at that as the first step.

The finalized maps designated 112 shoreline areas in the States of Ohio, Michigan, New York, Minnesota, and Wisconsin. We now need an act of Congress to carry out actual inclusion—not just studies, but actual inclusion. I urge subcommittee support for expanding the coastal barriers resources system to include eligible Great Lakes coastal areas.

The intent of inclusion is not to just wipe out development—not to prevent development of privately-owned Great Lakes coastline. The intent is to provide wise and sensitive investment of Federal and developer dollars in our regional economy.

Right now, the Federal Government actually encourages development of fragile areas through providing an insurance subsidy and other Federal assistance. This can create a market distortion that encourages unwise investment in high-risk development projects, and destruction of valuable habitat for the region's fish and wildlife, and that's counter-productive.

Inclusion of eligible Great Lakes shoreline in the Coastal Barrier Resources System would eliminate this market distortion and allow the forces of the free market to steer developers away from fragile areas.

I understand there are several matters that should be addressed in improving the Coastal Barrier Resources System, and that the Department of Interior study and recommendations on the system go a long way in spelling them out. So I wish to offer my assistance as you seek to remedy these problems, and I urge you to include all eligible Great Lakes shoreline in revisions to the system.

I appreciate very much the opportunity to testify. Thank you.

Senator BAUCUS. Thank you, Senator.

As I understand it, Interior submitted maps of the Great Lakes without any recommendation of inclusion. You're saying this morning that very definitely the Great Lakes system should be included. Is that correct?

Senator GLENN. Yes. Absolutely. We have, as I said, a coastline that, in its total, equals the whole East Coast of the Un ted States. And there are some very major population centers around it, so we have a lot of pressure on the Great Lakes area to develop maybe even more than some of our normal ocean coastal areas. We think that any consideration of our shorelines should include the Great Lakes, and we have support from our Great Lakes Senators to do that.

Senator BAUCUS. That's the second question I was going to ask. I'm glad to hear that you have the support of the Great Lakes Senators.

Thank you very much.

Senator Chafee.

Senator CHAFEE. Thank you, Mr. Chairman.

I'd like to pursue that, if I might, Senator, because obviously this gets into political heavy weather, as we all know. We are going to have developers on our backs—and on your back, too—because everybody is going to say this is great, but please don't include my section of land. I want to develop this. Why shouldn't I have a right to Federal flood insurance, to the Federal Government building a highway over here, and whatever it might be.

So you believe—I don't want to pin you down on this—that the Senators—when you add up all the Great Lakes Senators it must come to a goodly number. I don't know how many it would come to. How many States border the Great Lakes?

Senator GLENN. I'm a cochair of the Senate Great Lakes Task Force with Senator Durenberger, and we work on some of these and other problems that are common to all the Great Lakes States from time to time. I'am not sure how many members we have in that caucus, I guess it would be 18 or 20.

Senator CHAFEE. I would say that. Sure.

Senator GLENN. I'm told it is 16.

Senator CHAFEE. And you think, without pinning you down, that most of them support the proposal you have?

Senator GLENN. Yes, I do, indeed. And we could probably get a statement of the caucus, if that would help you in your deliberations.

We're not trying to prevent development—wipe it out in its entirety. What we're saying is that it should be done in a very carefully considered way so that we don't develop all of our Great Lakes wetlands and areas like that around our shorelines that really shouldn't be destroyed—the fragile areas, in particular.

We do not think that there should be such subsidies that encourage people to go into areas like that, as you said in your opening statement, I believe. So I would share your views on that.

Senator CHAFEE. The rule that the Department of Interior used for undeveloped was sort of a rule of thumb: one structure per five acres. In other words, if that's all there was, then that was considered undeveloped, and, thus, that particular area would not receive flood insurance. If anybody had a house there and had flood insurance, they'd get one bite out of the apple—one storm—and anything beyond 50 percent damage, that was it. The flood insurance program would pay them off, but they couldn't get renewed insurance.

It has worked very well.

We look forward to your enlistment in this campaign. All I can say from the experience of 1982 is to bring along your helmet and your flak jacket.

Senator GLENN. I've had those on, too.

Senator BAUCUS. In many different circumstances.

Thank you very much, Senator.

Senator GLENN. Thank you very much.

Senator BAUCUS. Our next witness is Mr. John Turner, director of the U.S. Fish and Wildlife Service.

Senator CHAFEE. Mr. Chairman, I think it is interesting to note this is the first time Mr. Turner has testified before us.

Senator BAUCUS. That's correct.

Senator CHAFEE. I want to join in a welcome to him.

Senator BAUCUS. Congratulations.
Go ahead, Mr. Turner. Proceed in any way you wish.

STATEMENT OF JOHN F. TURNER, DIRECTOR, U.S. FISH AND WILDLIFE SERVICE, ACCOMPANIED BY BARBARA WYMAN, REPRESENTING THE ASSISTANT SECRETARY FOR FISH, PARKS, AND WILDLIFE; FRANK McGILVERY, COASTAL BARRIER COORDINATOR, FISH AND WILDLIFE SERVICE; JUERGEN RHINEHART, RESEARCH GEOLOGIST, COASTAL SPECIALIST, U.S. GEOLOGICAL SURVEY; AND AL GREEN, SENIOR SCIENTIST, NATIONAL PARK SERVICE

Mr. TURNER. Mr. Chairman, good morning. My name is John Turner. This is my inaugural appearance before your committee aside from the confirmation hearing. It is a pleasure for me to appear before you this morning on behalf of the Department of the Interior and the entire Administration on the coastal barrier report which I understand we submitted to this committee in some 28 volumes earlier.

I have brought members, Mr. Chairman, from the Department's Coastal Barrier Study Group. They have worked on this for months, and hopefully will be able to answer your specific questions. I have on my right, representing the Assistant Secretary for Fish, and Wildlife and Parks, Barbara Wyman. I think she went through every word of this report over the previous months. I also have Frank McGilvrey on my left. He is our Coastal Barrier Coordinator for the Fish and Wildlife Service. And over here in the bright red tie is Dr. Juergen Reinhardt. He is a research geologist and coastal specialist with the USGS. And then behind me I have Doctor Al Green. He is the senior scientist for the National Park Service.

Mr. Chairman, with your permission I have a formal statement that I would like to submit for the record. I'd just like to make a few brief comments.

It is my distinct pleasure, on behalf of the Administration, to give our full support for the entire coastal barrier report submitted to the Committee. The coastal barriers issue is certainly a high priority of mine, and it is one of this Administration. And I think the report certainly fits in with our goals for wetlands.

I would like to make a personal observation to you and to Senator Chafee that I believe the Coastal Barriers Resources Act is certainly one of the landmark environmental pieces of legislation that this country has seen. It is quite innovative, as was pointed out in your discussions with Senator Glenn. It was an innovative approach which used economic incentive, not further Federal prohibitions or Federal land grabs, or whatever. It used economic incentives where, if you develop, you do it at your own risk and not with the help of the American taxpayer.

Briefly, Mr. Chairman, we support that part of the report which would add 791,000 acres to the system along the Atlantic and Gulf coastlines. This would be a tripling of the current system and would add over 400-plus miles to the 600-plus miles that are already in the system.

We would suggest that we change the definition of an undeveloped coastal barrier. Currently it talks about cemented, unconsolidated sediments, and we think that should be deleted so we can take in the cemented carbonates of the Florida area, some of the clay substrates of the Caribbean, and then some of the rock outcroppings of the New England area. We would like to approach it more on a functional basis and make that change.

We would like to include a lot of the aquatic habitat that is associated with these wetlands, and much of the acreage in the report, in fact, is wetlands.

We would exempt the navigational channels.

And then you will notice the report adds quite a bit of secondary coastal barriers that were omitted on the first round.

We think this proposal is very important, as I mentioned, in meeting the President's goals of no net loss on our nation's wetlands.

As Senator Glenn and you pointed out, part of our report included the 57,000 acre mapping along the Great Lakes. I do not detect any unfavorable posture within Interior, but simply, since we recently submitted those maps in June and we haven't run that proposal through all the trap lines (I'm just beginning to learn in the NEPA process of working with other Federal and State agencies) we do not have an official position on that. But I think we will soon—especially considering some of the legislation that would include the Great Lakes. But this morning that would not be a part of my recommendation.

We have had considerable input on the report on the other coastlines. We have had 26 public meetings, thousands of letters of concern, which we have summarized in the report you have before you.

In conclusion, Mr. Chairman, we believe that inclusion of the additional acreage in the Coastal Barrier Resources System is critical. To expand the system protects some of the nation's most precious living systems, and an expanded System simply makes good sense environmentally. It also makes good sense economically.

Thank you, Mr. Chairman.

Senator BAUCUS. Thank you very much, Mr. Turner.

Later on this morning Doctor Sheets of the National Hurricane Center will testify that the permanent populations of hurricane prone areas continue to grow. In fact, that tends to lead to a continued upward spiral of economic losses when hurricanes and other ferocious storms hit. In fact, a study by the National Wildlife Federation found that, since 1982, 594 structures have been built in the 186 coastal barrier resources system units, which amounts to a 40 percent increase. And over half of this construction is reported to have occurred in the State of Florida.

I was wondering if you think the act has been effective in limiting development of those units in the system. Or has it just worked in the sense that there have not been any developed in those areas where there probably wouldn't be any development anyway? The basic question is: has the act been effective in discouraging development in some of these very sensitive areas, keeping in mind the information I just gave you?

Mr. TURNER. Senator, I am aware of the National Wildlife Federation's report. I have not seen it specifically. I haven't had a chance to read it.

It is my understanding that some of the development they are talking about certainly had Federal involvement, but it is mainly bridges and roads and docks and so forth. And, of course, the intent of the Act wasn't to prohibit those kinds of things, except the more extensive residential/commercial housing-type development.

Ms. WYMAN. I might add that I believe that there were a number of structures that were built, but I believe, from our reviews from aerial photographs, they primarily were within 10 units of the 186 units. So the other 176 units have remained undeveloped, from our point of view.

Senator BAUCUS. Has the department conducted any systematic studies to attempt to determine where the act has been effective in limiting development in these areas?

Ms. WYMAN. We have not done any formal studies, Senator. The only studies that would have been conducted were as we were, in fact, reviewing recommendations for inclusion in the System. The study group, in its travels, looked at some of the existing units wherever they may have been and also reviewed more recent aerial photographs where they could, in fact, look at them and determine whether structures had gone up. That was the conclusion, at least, from their review in 1987, I believe, In fact, development had only occurred in ten units.

Senator BAUCUS. But you say the department has not conducted any systematic study.

Ms. WYMAN. We have not done any formal study.

Senator BAUCUS. I'm just curious. I understand the department is asking for congressional authorization for a study. Why doesn't the department just go ahead and conduct this study? You don't need an act of Congress to do that.

Ms. WYMAN. I'm not aware that the Department asked for authorization for a formal study on the existing units.

Senator BAUCUS. Well, I encourage the department to conduct a study to try to determine the effectiveness. Frankly, I think that the act in some areas has not been as effective as its authors—I can't speak for Senator Chafee—intended. If the rate of development is as great as the evidence seems to indicate, it seems to me that we've got something we've got to deal with here.

Mr. TURNER. Senator, I think that is an excellent question. I understand what we did was take the aerial photos in 1986 and 1987 and then go back and ground-truth them and see if we could figure out what was there in 1982. Our initial findings were that some 10 of the 186 units had had significant development on them. I'm not sure what they categorized as significant development, but some of that seemed to occur in the window of opportunity between the passage of the act and then the final prohibition. There was a considerable length of time before flood insurance was cut off, and a considerable amount of that development might have taken place in that window of opportunity.

Senator BAUCUS. Is there a date by which the department can reach a decision and, therefore, send this committee a recommendation on the items mentioned by Senator Glenn—the Great Lakes

shoreline areas? I know you said you're not in a position yet to make such a recommendation.

Mr. TURNER. Mr. Chairman, I'd be happy to take those specific recommendations and try to get a response back to this committee.

Senator BAUCUS. I'd appreciate that very much.

Thank you, Mr. Turner.

Senator Chafee.

Senator CHAFEE. Thank you, Mr. Chairman.

I think we all recognize that when we passed this act there was no way we could prevent development. If somebody has sufficient financial resources, they can build a house on these areas. All we could do is, if we had the money, presumably we might well have bought these areas or bought the development rights, but we didn't—that "we" being the Federal Government. So all we could do was prevent the use of Federal funds.

I think the biggest arrow in our quiver in connection with this was the Federal flood insurance. But I think you could discover that there may well be development in many of the places if somebody wanted to go ahead and do it at their own risk.

I would be interested in that review of how effective this has been.

Secondly, how do you monitor this? Example: the flood insurance probably is fairly clear cut. But a road—now, a road is going to be built in one of the barrier islands off Georgia. How do you know whether that road is federally funded or not? Who tracks this thing and says you can't do that?

Ms. WYMAN. Each department is responsible for policing their its activities. I would guess that, in the case of roads, it would be the Department of Transportation. In the case of Federal flood insurance, it would be FEMA. And, in the case of sewage treatment plants and lines it would be the Environmental Protection Agency. They all, in fact, have their own regulations dealing with the implementation of the Coastal Barrier Resources Act.

The only way that the Department of the Interior is involved is if one of the agencies has received an application for funding an activity, such as a road or a sewer line or whatever it may be, then we are contacted and consulted pursuant to the requirements of the Act as to whether we believe it would be appropriate.

Senator CHAFEE. In your recommendations, as I understand it, you suggest deleting the military and the Coast Guard units. I believe that there are four such military or Coast Guard units currently now within the system, and in the legislation there is an exemption for military activities that are essential to national security. In other words, Federal dollars can be used for that on these barrier exempted areas.

How do you make certain that the military dollars—should we have a provision in there that is more specific. The military wants to build an officers' club in one of these areas, I don't think that is essential for national security of the country. How do you monitor that? Or do you just leave the military alone?

Ms. WYMAN. We have no way of monitoring them. Unless they come to the department in a consultation process, as is required by the Act, we would not be aware of their plans, for instance, to build an officers' club. But, as it stands right now, with the areas that

are included in the system, the military would, in fact, contact the Department of the Interior and indicate what their plans are. Of course, we would advise them that an officers' club probably necessarily wouldn't be considered in the national interest. But that doesn't prohibit them from putting it in if they make that determination.

Senator CHAFEE. What do you think about a redevelopment area? Let me give you an example. The guideline is one structure per five acres. If there is more than that, then that is considered developed, and thus is does not fall within the barrier beach definition.

Suppose you had a situation where you had 15 acres with 10 buildings on them; thus, it didn't meet it. Along comes Hugo and takes away all 10 buildings. Now where are we? It would seem to me that then the area would fall into the criteria. But, of course, we'd have to go through the map business all over again. Any suggestions how we might deal with a situation like that?

Ms. WYMAN. The report that was sent to the committee included a final recommendation which we called the "next step" recommendation for that purpose, because one of the questions that was looked at was not only areas that may be wiped out, but areas that may not necessarily fall into our criteria of a quarter mile of shoreline length.

There may be smaller areas that are not yet developed. Agencies may wish to consider whether or not these areas should be developed.

And so we ask that there be a multi-agency review to look at that issue, along with what you have just brought forward, and make recommendations to Congress on what might occur in these cases.

Senator CHAFEE. Good.

As I look back on this Act, I think it was a wonderful thing we did, but also sort of a miracle. Let me just read you some of the language that is being used in the Carolinas in this subject.

There is a man whose place was washed away, and now the State's new strict beachfront management law, designed to halt erosion and preserve beaches won't let him rebuild.

> By God, I paid for it. I'll do what I want. To tell a man he can't rebuild what he has, hell no, you can't do that. You'll have another Civil War. We'll blow up the causeways and succeed from the union.

A strong letter follows.

In doing this, we call on every bit of support we can get from the Administration, as it is the right thing to do. And, furthermore, clearly Federal money should not be used for this.

Thank you, Mr. Chairman.

Senator BAUCUS. Thank you, Senator.

Mr. Turner, is it your sense, generally, that the act is working? Or is it your sense that the Administration should recommend and the Congress should enact further measures to further restrict excessive development in developed and undeveloped units?

Mr. TURNER. Senator, Moose, Wyoming, is a long way from any coastal barriers. We do have constituents, though, who write those kind of letters, so I can identify with that.

Mr. Chairman, I feel that the Act has worked extremely well. I know we talked a lot about it on the National Wetlands Forum. That doesn't mean there aren't problems—and Senator Chafee has brought up some. We have an equity problem where Federal subsidies are still used out on coastal barriers outside areas that have been identified. We have exempted some "other protected" lands, and whether they are Interior lands or State lands—we have had, at least in one instance, a convention center and rental condominiums built out there with the flood insurance intact.

The military question is certainly legitimate, though we didn't identify any significant problems with the military exemption.

So, as Ms. Wyman said, it is an area probably bigger than Interior. But, with the devastation of Hugo and other storms, it is one that merits our ethereal investigation.

I still think the Act was a good one, but there are a lot of unanswered questions out there. That's why one of the things the report does is a pretty high-flight look at it.

Senator BAUCUS. But another question comes to my mind. There is a lot of talk these days about global warming. I think there is significant evidence that, in fact, the earth's atmosphere and the oceans are warming. There is not much doubt about that.

One of the consequences most scientists say will be increased volatility in weather conditions and increased frequency of volatility of extreme weather conditions. We are more likely now to have more severe droughts, and we are more likely to have more severe storms, and they are likely to occur more frequently.

There is not a lot of precision in all of this, but if it is our collective sense in this country that, in fact, that phenomenon is true and there will be increased frequency and greater severity of various severe weather conditions, that, to me, indicates that there is a higher probability that we will have more Hugos, for example. And if we do have more Hugos—force four or five categories—that, to me, at least implies that perhaps we should rethink some of the provisions that affect coastal barrier development. Do you have any thought on that?

Mr. TURNER. Mr. Chairman, the Fish and Wildlife Service is certainly going to propose some extensive studies on coastal estuaries as they relate to global warming and what the impact on those systems might be and what kind of wildlife communities can be good indicators of it.

I am also impressed with some of the good work that has been done on a cooperative basis with some of the New England States, the Department of the Interior, and the private sector in the rehab of the Chesapeake. Now we're moving to Delaware and reviewing some of what has been done. So I think it all ties together.

I would like to work with EPA and NMFS and other people who have long been involved in this subject matter and see if we can't increase our efforts on the whole coastal estuary and coastal barrier issue and tie it in to the global warming problem, which is a big one. But we'd like to take a crack at what seems to be appropriate to the Service.

Senator BAUCUS. Thank you.

Senator Chafee, anything further?

Senator CHAFEE. No, sir.

Thank you.

Senator BAUCUS. Thank you very much, Mr. Turner.

Mr. TURNER. Thank you, Senator.

Senator BAUCUS. We appreciate this inaugural interchange. Thank you.

The next panel will be Doctor Sheets, Director of the National Hurricane Center.

Welcome to the committee, Doctor Sheets. Americans know you very well. We have seen you tell us what is going to happen, when it is going to happen. We admire your expertise. We also admire your constitution. I don't know if you ever slept during those hours. We got a little of that last night. The Senate didn't adjourn until after midnight last night. But, anyway, we very much appreciate the work you have undertaken and the service you performed.

STATEMENT OF ROBERT SHEETS, DIRECTOR, NATIONAL HURRICANE CENTER

Mr. SHEETS. Thank you, Mr. Chairman and Senator Chafee.

Last week, of course, we had Hurricane Hugo. I think everyone is well aware of the problems that were there. We flew along that coastline on Saturday, and then I sort of walked the beach there and walked the areas on Saturday afternoon, Sunday, and Monday. I have done that in the past in the wake of other hurricanes—Hurricane Alicia, Hurricane Frederick, Hurricane Elena. I'm here to tell you that the extent of the devastation is larger than I have ever seen in any previous hurricane. There have been other areas where we have had more complete devastation over localized areas, but I have never seen anything as widespread as we have seen here with Hurricane Hugo. If my slides are all here, then I will be able to show you a little bit of what we experienced along that coast.

Senator BAUCUS. You said more widespread. How widespread?

Mr. SHEETS. Well, over the coast we are going to show you some slides to illustrate that, but about a 100-mile section of the coastline received extensive damage. To compare that, for instance, if it were the Southeast Florida coast, it would be from Miami through Palm Beach.

I understand from all the numbers that I am seeing now that we are going to see probably more than $2 billion in damage from this particular hurricane, and I wouldn't be surprised if it would be larger than that.

If you were to put that same hurricane in a more populated area like Southeast Florida, we would have seen a $5 billion hurricane very easily. If we had moved it across the State, you would have seen much more damage than that, if it was going essentially on an east-west kind of track.

One of the things that bothers me a little is that I know those people. I know the people along the coast, as I have gone there and met many of them during the past two or three days, and have done this up and down our coast. Sometimes I think there is a misconception that everyone who lives on the coast is a fat cat, and that's just not true. There is certainly that element that is there, but there are those who have lost everything that they owned in

this particular situation, and my heart goes out to them, and I think we need to consider those people, too, as we look at these rebuilding situations there.

Undeveloped islands saved us a lot in this particular hurricane, as we will illustrate. Those undeveloped areas prevented major devastation that would have been there, because the peak event of this hurricane actually occurred over the Francis Marion National Forest, not where people were. The strongest area, the largest storm surge, the strongest winds—actually occurred where there were no people. Had it occurred over Charleston—we're going to illustrate that for you in a moment—the devastation there would have been much more than it was.

I have a formal statement that I'd like entered into the record, and then just go through my slides here and sort of illustrate the problem.

This is Hurricane Elena in 1985. From the space shuttle, they can look quite beautiful, as you see there, to meteorologists and everybody else that stands back in awe of these particular hurricanes. Along the coast, however, where the storm surge is encountering that coastline, and particularly within the first few blocks of the coastline where the waves are breaking, there are major problems—as you see here.

Buildings are not built to withstand that storm surge, and I will illustrate that later. One of the problems we have had on the barrier islands is that people tend to build on top of the sand dunes or even in front of the sand dunes, and along comes nature every so often and gives us a gentle reminder that that wasn't so wise.

A lot of these people have been misled. I think that as you go down along the coast—Galveston, Texas, down to Corpus Christi, Mustang Island—people out there where sand is being pumped up, sea walls are being installed three to four feet above sea level, and developers have gone there and tried to convince these people there is no hurricane problem, they go in and spend their life savings and they are out there. So I think that is the element that we need to address in trying to stop that type of devastation.

But you can see here it was really mostly storm surge— not much of a wind problem. You can see the shingles on the roof are not that disturbed.

Sometimes nature is not so gentle in its reminder as it was in that particular case.

In 1900 we had a class four hurricane that went across Galveston, Texas, and put somewhere around 15 to 18 feet of water across that island. Galveston looked like this before, and looked like this afterwards. We don't want to see that again, because there were 6,000 lives that were lost there— about a third or a fourth of the population of that city were killed as a result of the storm surge.

From the National Hurricane Center perspective, my primary testimony here today is our concern over the potential loss of life. In other words, that's the main concern—loss of life. Property, yes, but life. We're concerned about people being trapped on these barrier islands because of access routes. We had a good experience there with the Charleston situation that we'll illustrate a little bit later where access is cut off.

To illustrate the storm surge a little better and the power of that storm surge, we've used Hurricane Camille here as it moved into the area just to the east of New Orleans between Biloxi, Mississippi and New Orleans. The winds on the right side were about 175 miles per hour. Devastation there was nearly total right in close to the center, but this hurricane was not nearly as large as Hurricane Hugo.

Before that storm came along, there is a little bit of blue down in the lower right. There is an eight-foot seawall there, four-lane U.S. 90, big, old oak trees, three-story brick front apartment complex, before. And here it is afterwards. Twenty-three of the twenty-five people who stayed there died.

Frederick, 1979, went across an area called Gulf Shores, Alabama, and many other barrier islands. This is what Gulf Shores looked like before Hurricane Frederick came along. Again, a very fragile barrier island, particularly toward the west. It is very narrow, as you see there.

There is only one condominium prior to Hurricane Frederick. And the questions that were asked earlier about the roads if it went back in. Were they from one department undermining what some other department is trying to accomplish there? In this area, the mayor there is a good friend of mine and they have done an excellent job in terms of their building codes and building standards, but this is what it looked like afterward. They only had one condominium on that island before Frederic. Most of the homes were the little homes here—individual homes on the left. They had built behind the sand dunes. This condominium bulldozed down the sand dunes and built right out to the beach. This is what it looked like afterwards. And you see most of the homes are also gone.

Looking down the beach again you see, that most of the homes along the beach side of the road were gone. Most of the buildings there were gone. And those that remained, were gutted and heavily damaged. You'll get some of that from Hugo in just a moment.

I was back there in 1982 and took this picture. You'll see where that condominium was rebuilt. Instead of having an individual home next to it, it now has other condominiums next to it. You also see the erosion around them. The natural migration of the sand along the barrier island is here from the east to the west, and you see it kind of dug in on its neighbor there.

From the ground I took a picture, and the water was undermining that house. But where we used to have one family, now we've got 10, 20, or 30, and we still only have one access to that barrier island. That's our concern.

I went back in 1986 and put this together. This is a composite of Gulf Shores, Alabama. You'll see the number of condominiums there where before there was only the one horseshoe shaped condo before Hurricane Frederick struck in 1979. All of this building has taken place since 1979.

Last year I went back there and I counted 54 condo buildings on the ocean side and 56 on the land side of the main street down through there.

Now, my concern, from the National Hurricane Center, is that we got the people out in 1979 over that one roadway system. But

now we have put thousands more people in that area that are very vulnerable to this hurricane. Can we get them out the next time? That's the real concern we have.

This year has been very active. Most of you are probably not aware that at the National Hurricane Center we have national and international responsibilities—essentially from Africa all the way almost to Hawaii. In the Eastern Pacific we are up to our 18th storm. We have Hurricane Priscilla going out there at the moment.

In the Atlantic we have had Allison and Chantal in the Gulf of Mexico. And then out in the Atlantic, many other storms have occurred this year coming from Africa.

Hugo looked like this as it went through the islands. It was a very strong hurricane—140 mile per hour winds. As it is approaching the U.S. Virgin Islands it has already gone across Guadalupe. You have seen the pictures there. It weakened slightly as it moved across Puerto Rico. Fortunately for Puerto Ricans, it just brushed the east coast. The west portion of the island and the southern portion of the island did not suffer much damage, but the east part did.

And then it strengthened as it moved just north of the Bahamas and headed towards the southeast coast. At this time, we had to put up hurricane warnings for essentially from the Georgia border with Florida all the way up to the Cape Lookout, North Carolina, area. That's the red zone. What you're seeing in red is the area of hurricane-force winds. What you're seeing in orange is the area of tropical storm-force winds. You can see the breadth of the warning area.

The damage occurred essentially from north of Savannah all the way up to the end of the Cape Lookout area through the Myrtle Beach area. We'll get to those pictures in a moment.

This picture is in your folder, and it shows the eye of the hurricane during the daylight hours before Hugo moved onto the South Carolina coast. And here is the visible picture as it was moving towards the Charleston area. And then the radar from our office in Charleston, which did an excellent job throughout this hurricane—that's the radar. The eye is heading right directly toward Charleston.

And then here, from our NOAA research aircraft that was flying along the coast, what that shows is that the wind in the right side, in the right eye wall there, at flight level was measured at about 150 miles per hour. Now, down at the surface it was probably 135. But the point I want to illustrate now is the right side, the right eye wall, is where you have the maximum impact, and that moved directly across the coast on this track. Charleston is to the left. You see the center went just to the right of Charleston and inland and did a lot of damage.

But notice the big green area on that map. That's the Francis Marion National Forest and the national beach preservation area there and bird refuge. That's not populated. And that's exactly where the core of the hurricane went.

The eye went across Charleston. Charleston was in the left side of the eye. They were in the center about 30 minutes or so in Charleston. But on the right side there, illustrating here the winds circulating around, you see the peak event is in the national forest

area. If you were to put this hurricane anywhere along the South Carolina coast, this is probably the spot that you would have the least amount of damage.

The storm surge in that area, using what we call the slosh model, was about 20 to 25 feet. I spoke to some people—we're going to see some slides here in a minute—up into the McClellanville area, where a ship went across the top of a two-story building and cleared that building. The building was destroyed. The ship was deposited up there inland. So that's the storm surge in this particular track.

Now let's see what happened on the ground. To the south of Charleston was a lot of tree damage. This occurred for several miles south of Charleston. Of course, the winds are blowing off shore here, so the damage along the coast was not that great.

In Charleston, itself, yes, there was damage. But most of the structures did very well. However, the tin roofs were torn off. Some buildings were destroyed. But some of the big old southern mansions there—you see the roof there destroyed. You see the window out and down in the garage. He's not going anywhere, either. That's the debris that came down there.

This is on the battery area right down on the water front.

This is looking down the battery. And this is typical as to what happened down there. All the roofs are stripped off— the tin roofs. In fact, I experienced some of that southern hospitality and I stayed in that home for two nights and experienced not having the water and the food and electricity and all those other things. They put plastic over the top of that roof. I experienced Monday morning waking up with the plaster falling off the ceilings. And so a lot of the damage is after the fact.

Ian Walker, who is on the roof, and I went up on the roof for about two hours and tried to recover and help cover that roof up in the driving rain. So we experienced that hurricane from all aspects.

Down the coast here this is what the battery looked like—right on the front. The purple house there is the one we stayed in.

So structurally they did all right except for the roof damage and then the after-the-fact damage because of the heavy rains.

Right in the home next to the one that I just showed you, the storm surge water came up to that mark. You see the stillwater mark 33 inches in the house, back across the park area there on the battery.

Now, if that hurricane had been a little bit further south, as I'll illustrate later, instead of that being there, it would have been almost another ten feet higher.

There in Charleston are lines to get gas, lines to get food, lines to get water. You see the little dribble coming out of there. It is an artesian well. All these people are lined up because their water supply was not available. But they did relatively well compared to the coastal areas.

Take a slight change in the track—the red is the track it actually took—move it to the pink on the left side there, and Charleston would then have experienced 20 feet of water. And where I showed you that line, they would have been another 5 to 10 feet above that level.

So, indeed, we were fortunate on the track Hugo came in on.

Now, on the barrier islands this is what it looked like inland away from the shore. You see, indeed, there was a lot of wind damage down there. This was on Sullivan Island and Isle of Palms. You can see a lot of damage there. You see the house in the lower right which floated from the beach and inland there. Lots of damage there.

You see there is a missing house down here in the middle of the picture. That's the house up there in the right up against the house over there across the road. So the storm surge picked that up and took it over there.

All of the first floors of houses are gutted. See the one here? It was picked up and taken across the street. That's up and down those coves. Massive, massive damage there. All of the front row is gone.

In your folders you've got some pictures showing some of that kind of situation.

Here, one house remains there structurally. I went down on the ground and took a picture there. Down the beach you see what it looks like out in front of that property. This is on the Isle of Palms. Here's what it looked like from the front. The storm surge came through and totally gutted that home.

Down here, this is inland a block—totally gutted down below. The house stayed up above—the reason you have to elevate for the flood insurance program.

Here a house that was built on concrete blocks—the house is the gray house in the background. It was on the second floor. Of course it tumbled and floated away.

And just on and on. This used to be on the third floor. It is now on ground level.

This is just totally open. This house floated away. The whole front wall is gone. I'm just looking in. The whole front wall is gone there. It is totally open.

The trees stopped this one from moving too far—tried to cut it in half. There was one house that I saw that was totally cut in half by a tree that was deposited another block away. The kind of construction that was there totally failed. Very poor building codes, and very poor building practices.

Somebody did it right in the lower right there, up in the middle, you see a house that is built in the side of the hill. It stayed. Down here below, not so well.

The erosion, as we go north up toward Myrtle Beach and Pawleys Island. You see the whole row moved in. I believe this one is also in your folders. I have just used a few pictures to illustrate the erosion on the beach front.

You see how narrow this little stretch of land is? I believe this is Pawleys Island. It is very fragile. Right behind it are the wetlands. Clearly, this should not have been developed, as we look back in history. It should not have been developed, and yet those people have lost everything.

Now, here is an illustration of what is happening to the barrier islands. The natural process is that they move. And so the barrier island migrated away from this lighthouse. It used to be on land. It

has moved away from that lighthouse, which illustrates very well how far that barrier island has moved.

Down the coast you can do fairly well if you build right and build up. And the flying saucer (type house) that landed in the background you see back there did very well. So there are types of structures that can stand up and can get away from the storm surge.

I understand one of your colleagues owns this home. He did the right things. This is on Wild Dunes area. Notice that he put his shutters up. Notice that he built behind the sand dunes. And he suffered a little bit of damage. I believe that is Senator Hollings home that is in the Wild Dunes area. It did very well. There was a little bit of damage here and there, but he did the right things. He built behind, put the covers on the windows, and suffered minimal damage.

This slide I think illustrates the fragile nature of the barrier islands and our concern. If you look here you see all that population. Where do they get off of that island? Well, usually it is one road for many islands all linked together—one bridge. And, indeed, in the case of this bridge, it went out after the fact. What would have happened if it went out before the fact?

Our major concern is that kind of situation with people being trapped on the barrier islands.

I believe that illustrates the problem, Mr. Chairman.

Senator BAUCUS. Thank you very much, Mr. Sheets.

The first question that comes to my mind is: based upon your experience and what you have seen, what are the implications for the legislation that we are discussing today? Do you think that there should be more restrictions? What do we do about those areas that are now developed with only one bridge? Is the answer more bridges?

Mr. SHEETS. It is a two-edged sword. That is really what we have. Again, the Florida Keys right now wants to put a four-lane road and bridges going into the Florida Keys. They need that. They have 80,000 people down there that we know it takes more than 30 hours to get out. We know our own limitations in being able to forecast what is going to impact them 30 hours from now. So they need that four-lane road. They need it elevated. And so I endorse that.

At the same time, when you put that four-lane road in, then you encourage more development.

So my personal opinion is that we need to restrict the type of wide-spread development that we are seeing. Often, what happens is sort of like what happened there in Gulf Shores, Alabama. When the hurricane comes through, it is sort of an urban renewal program. It takes out the small guy, and now comes in the condominium that replaces the single-family home. We cannot afford that in terms of putting those people at risk unless there are also means of providing protection for their lives. There ought to be some means of last resort refuge on that island, for instance, and down in the Florida Keys, or better access to those areas, or limit the population that is going to be on those exposed areas.

The same story is on Sanibel and Marco Islands on the West Coast of Florida. They want to put a four-lane road in, and so on.

And so, again, they need it for the people that are already there. But as soon as the road goes in, you compound the problem because you get more people in there.

Senator BAUCUS. You heard the testimony of the Director. What would you tell him, based upon what he said; that is, as you were listening to him did certain points come to mind that he should know about? I'm just curious, again, based upon your experience, what you'd tell him. He's new to the job, new to the Act, and so forth. As he implements the Act and as he sends us recommendations as to how to change it, if at all, what would you tell him?

Mr. SHEETS. Number one is that, indeed, those places that are not developed, let's keep them not developed, in general. I think that's the number one——

Senator BAUCUS. Keep the undeveloped undeveloped.

Mr. SHEETS. Undeveloped if it is in the fragile state as we have seen there. It was a real blessing that the forest was in that location in South Carolina. Nature will take many years to come back, but it will come back. At least it didn't affect the population in that situation.

The other part I'm torn about—as I say, these are friends of mine. I've gotten to know them. They think I am their friend, and I am. I understand the comment that the individual made in that newspaper story that you have. If it were my home I would probably feel as upset as that individual. And I want to point out, again, that not all of these people are wealthy people. They are people who have put their life savings in there. We have to consider that in some way of perhaps compensating as best we can.

But I agree totally with the bill that it should not be a subsidy situation. As a taxpayer, myself, I should not be subsidizing someone who decides to go out there and take the risk, knowing what the risk is. That person should be able to take the risk if he has the other clearances (ecological etc.) to do that, but it should be on their own.

Senator BAUCUS. Thank you very much, Doctor Sheets. I wish we had a lot more time. There is a vote going on, so I will turn it over to Senator Chafee who, frankly, has much more experience with the Act.

Senator CHAFEE. Thank you, Mr. Chairman.

In your testimony you suggested that "individuals choosing to build in an at-risk area bear all economic risks." I couldn't agree with you more. We looked very carefully at the pictures you had here, and we do have a problem that seems to compound itself, as you mentioned.

Your concern is making sure that the individuals are able to evacuate in the event of a storm. So, therefore, the solution apparently to that is to make sure there is more than one bridge and more than one highway. Once you do that then, of course, people feel more secure and, therefore, go out and build more houses, as your illustrations on the Gulf coast where the hurricane came in by Gulfport. I can remember that. At the time, I was Secretary of the Navy, and the Seabee base at Gulfport was devastated.

But the answer to it was to build more buildings, but make them more secure.

So we've got a difficult problem here. I couldn't agree with you more. It seems to me the solution is to have the people bear their own risk. Then if they want to go out and build houses in an area where construction is permitted—assuming the State laws permit it, and so forth—then that's their business. But what we're trying to do here is to not have the Federal Government subsidize it in any way. So your testimony has been very helpful.

I think the primary way we can get at this is through the Federal flood insurance program. Just to show that the flood insurance program is not a sound economic undertaking, private insurance companies don't get into it. I suppose at some cost they provide it, but certainly they can't compete with the Federal Government's subsidies of the flood insurance program.

So what I'd like to see, frankly, is to get rid of the flood insurance program.

I want to thank you very much.

Mr. SHEETS. Can I comment on the flood insurance program?

Senator BAUCUS. Sure.

Mr. SHEETS. One of the problems with the flood insurance program is that by elevating, which you have to do for the flood insurance program, you increase the danger from the wind. And so it is an offsetting kind of a situation, and if they don't build properly, once they have elevated, then you destroy the house because of the wind. I've got many illustrations of that.

I believe what should happen is that there ought to be a comprehensive wind and flood program—not Federal, but in the private sector. That would force buildings, wherever they are going to be built, to be built to some reasonable standard and we wouldn't see the kind of destruction that we see there today.

Senator BAUCUS. If I might, Doctor Sheets, do you agree or disagree with the assertion of some scientists and climatologists that we're going to have a greater frequency in adverse weather conditions, and also that those adverse weather conditions could possibly be more extreme due, in part, to the global warming phenomenon?

Mr. SHEETS. It is possible, but the evidence is so fuzzy that I certainly wouldn't stake my reputation on it.

What we're seeing today is more of a return to the hurricane activity similar to what we had in the 1940s, 1950s, and 1960s. We have been through a real lull in hurricane activity during the decade of the 1970s and the 1980s up through 1985, and now we see it going back to a more natural distribution of those hurricanes. That's my opinion now. So it has nothing to do with global warming yet.

But as you look at the reservoir of energy, which is the ocean, indeed, if it does warm up, theoretically those storms could be more frequent and stronger.

Senator BAUCUS. So the point is that most of the energy for tropical storms is the heat that is in the water? Is that correct?

Mr. SHEETS. That's correct. That is the source.

Senator BAUCUS. Is the temperature of the oceans rising generally? Or is the temperature rising in those parts of the ocean where hurricanes tend to be found?

Mr. SHEETS. No evidence of that whatsoever to date. It is a very long-term process. We won't see that probably for the next decade or two.

But half a degree rise could be significant, but we're not seeing anything abnormal yet.

Senator BAUCUS. And so there is no evidence yet either way? Nor is the temperature lowering? Is that correct?

Mr. SHEETS. That is correct. If you go back—and, indeed, we are changing the structure of the atmosphere—the constituents that are in the atmosphere, itself. So that is changing, and theoretically this will change the temperature. But I think that it remains to be proven as to what the impacts will be downstream.

Senator BAUCUS. If there is global warming, and if temperatures in the oceans are rising, does that mean that there will be storms of greater intensity and greater frequency?

Mr. SHEETS. Theoretically, that is correct.

Senator CHAFEE. Mr. Chairman, just one quick point on the Federal flood insurance. Although I am opposed to the whole program, I think that we have an obligation to those who built based upon the program being there. And so we have got to continue coverage for those individuals.

Finally, Doctor Sheets, I just want to say, as millions of other Americans, we watched you throughout that, and I felt great pride in watching you perform, great pride in our governmental service. I just felt very, very proud that we have individuals like you. We've got a lot of wonderful people working for the Federal Government, and you certainly are an outstanding example of that group.

Mr. SHEETS. Thank you.

Senator BAUCUS. Senator Chafee is absolutely correct in that.

Mr. SHEETS. Thank you.

Senator BAUCUS. Many Americans are very proud of what you are doing, and others working with you.

Mr. SHEETS. Thank you very much.

Senator BAUCUS. We will now temporarily recess. We have a vote going on. We will recess for about 10 minutes.

[Recess.]

Senator BAUCUS. Our next panel is: Doctor David Keating, who is executive director of the National Taxpayers Union; and Ms. Sharon Newsome, vice president of the National Wildlife Federation.

Mr. Keating, why don't you proceed?

STATEMENT OF DAVID KEATING, EXECUTIVE DIRECTOR, NATIONAL TAXPAYERS UNION

Mr. KEATING. Good morning.

Thanks for the opportunity to appear at the hearing today. I represent the 200,000-member National Taxpayers Union, and our interest, obviously, is in limiting the burden of the taxpayer. That's why we support the Interior Department's recommendations to add almost 800,000 acres to the system.

Senator BAUCUS. Before you go any further, Mr. Keating, we're kind of short on time here, so I am going to limit each of you to five minutes.

Mr. KEATING. Okay. No problem.

Senator BAUCUS. Thank you.

Mr. KEATING. Expanding the size of the coastal barrier resources system would stop unwise Federal subsidies for development on these ecologically fragile islands and save taxpayers up to $9.3 billion over the next 20 years. We think it is time for Congress to implement these recommendations and stop throwing our tax dollars out to sea.

We supported the original act in 1982, and we expressed our support again during the Interior Department's public comment phase. We hereby reconfirm this support today.

The original act recognized the fiscal folly of subsidizing development on barrier islands. Since that time, the system has saved the Federal Government perhaps as much as $800 million. Yet, we still subsidize development on many unprotected, undeveloped barrier islands.

A study released earlier this year by the National Taxpayers Union and National Wildlife Federation concluded that expansion of the existing coastal barrier resources system to include the acreage recommended by the U.S. Department of Interior on Atlantic and Gulf of Mexico coasts could lead to savings to the Federal Government of nearly $1 billion to $9.3 billion, depending on the level of development.

These savings include the major one-time capital costs of urban infrastructure and costs for disaster relief, flood insurance subsidies, and shoreline protection. But they are conservative, because they don't include many other costs, such as the full cost of the flood insurance program, maintenance and engineering costs of infrastructure, and some of the catastrophic expenses from major hurricanes—not to mention the loss of life.

I have appended this stud· to my testimony and ask that it be included in the record.

[Retained in committee files.]

While the Interior Department did not formally recommend inclusion of Great Lakes shorelines into the system, it did draw the maps necessary to include this shoreline. We support including the Great Lakes shoreline into the coastal barrier resources system. If this acreage is included, our study estimates that an additional $317 million to $824 million could be saved, as well.

I was also quite gratified to hear Senator Chafee's comments earlier this morning that we should continue to permit people to spend their own money to build their own homes on barrier islands. To build such permanent structures in such an environment might be unwise, but for the Federal Government to subsidize such development would be irresponsible.

In conclusion, I'd like to restate our support for expansion of the system. It could save the Federal Government billions of dollars, protect property and lives and preserve the barrier islands' environment. With the national debt racing past $3 trillion in the near future, we can ill afford this chance to save up to $9 billion.

Thank you very much.

Senator BAUCUS. Thank you.

STATEMENT OF SHARON NEWSOME, VICE PRESIDENT, NATIONAL WILDLIFE FEDERATION, ACCOMPANIED BY ELISE JONES, COASTAL BARRIER PROJECT COORDINATOR, NATIONAL WILDLIFE FEDERATION

Ms. NEWSOME. Thank you for the opportunity to testify.

My name is Sharon Newsome. I am vice president for Resources Conservation at the National Wildlife Federation. With me is Elise Jones, who is the Coastal Barrier Project Coordinator at the Federation.

I am testifying not only on behalf of the Federation, but on behalf of 28 other organizations, including other national organizations and State environmental groups who have a very strong interest in seeing the coastal barrier system expanded significantly.

This hearing is particularly timely in the wake of Hurricane Hugo, which, just as we have seen in the slides, serves as a tragic reminder of the folly of building on our nation's shore.

Some have estimated the final price tag for Hugo could be in the neighborhood of $10 billion. American taxpayers will have to pay for all the disaster relief assistance from the hurricane, as well as any Federal flood insurance losses that exceed payments.

As Senator Chafee said earlier, the estimate is that Federal flood insurance claims could amount to $400 million. There is only $500 million in the National Flood Insurance Fund at this time.

It is more critical than ever that we re-examine the direction of coastal development. Hugo's reminder, added to the concern over wetland loss, coastal pollution, global climate change, and our enormous Federal deficit, makes legislation to expand the system even more important.

A number of people have talked about the importance of coastal barriers to our environment—their importance as fish and wildlife habitat, the importance of wetlands. It is estimated that coastal wetlands produce as much as $5 billion worth of fish and shellfish each year.

The impacts of development on coastal barriers are also very severe. Not only does development interfere with the sand sharing system, it destroys this valuable fish and wildlife habitat.

As Doctor Sheets has so well reminded us, coastal barriers are very dangerous places to live. We need to be very careful about how we encourage and foster development in these areas.

Statistics from the National Oceanic and Atmospheric Administration show that average property losses from storms rose from $300 million per year during the first third of this century to a current annual rate of $2.4 billion. This figure is expected to rise to $5 billion by the year 2000.

Senator Baucus, you have asked several of the witnesses today about how effective the Act has been. I would like to talk about that for a few minutes.

The Federation did do a study. I believe we are the only people who have really compared recent aerial photography from 1985–88 with the aerial photography that was done the year the Act was passed. In that study, we found that structures have increased by

only .6 per 100 acres of fastland, and we think that it has shown to be very important in reducing the density of development.

Of the 157 units that we were able to examine, only 10 had experienced major development of 10 or more structures since 1982. Only 594 new structures have been built on these 157 units since 1982, and only 5 units would no longer be considered undeveloped according to the Act's criteria. We think that is a pretty impressive record.

That does not mean that we think that this Act has done all that it could do or should do. There are important strengthening amendments that we hope you will consider.

The Federation and the other groups on whose behalf I testify today support the expansion of the system to include all eligible coastal barriers on all four of America's coasts, and for that reason we hope that you will include the areas that the Department of Interior has mapped as eligible on the Great Lakes, and that you will include a provision in legislation that you might draft that would require the mapping of eligible areas on the Pacific Coast.

One of the areas that we believe that the Department of Interior has gone in the wrong direction is on military and Coast Guard land. The system currently includes four units of military and Coast Guard land, containing 15,000 acres and 42 miles of shoreline.

The Interior Department identified another 29 units of military and Coast Guard lands that would be considered undeveloped. These include 30,000 acres and 42 shoreline miles. The department, however, not only would delete all existing military and Coast Guard lands in the system, but would not include these 29 units. And we believe that is not the way to go.

There are several examples of why including Coast Guard and military lands is important.

The beach clubhouse on Camp Lejeune, which was proposed earlier in the 1980s was never carried out, but the argument was made by the Defense Department that it was essential to national security. In fact, one of the problems has been that the Defense Department argues that anything that they want to do is important to national security.

We don't think that is right.

There is a current proposal for construction of a commercial space port on Elgin Air Force Base in Florida which includes some undeveloped land. Again, given how risky these areas are for hurricanes, we don't believe that's the right place to be thinking about doing this.

Another area where we believe the department's report fails to go as far as it should go is on "otherwise protected" areas. These areas comprise about one third of the Atlantic and Gulf Coasts. There have been many proposals for what we consider to be inappropriate development—particularly in Texas, where many thousands of acres are considered "otherwise protected." Yet, there have been proposals to lease land for a golf course on the Meridian State Park that is habitat for golden-cheeked warblers. They have proposed leasing lands in the Francis Island State Recreation Area for a 71,000 unit development. We think that those are not the right activities for "protected" lands.

Finally, we think that there are important things that you need to be adding to your legislation.

The department considered a proposal to deny Federal funding for projects occurring outside the system, but which directly affect a unit. We believe that you should go back and reconsider that and include it in your legislation.

One of the examples of why this is important is a current proposal to grant a free easement of military land for the construction of a mid-bay bridge from the Elgin Air Force Base to Marina Point.

Senator BAUCUS. I'm going to have to ask you to summarize.

Ms. NEWSOME. Okay.

The other area we would ask you to look at is on permits. Currently there is no process by which Federal permits would be looked at to make sure that they are consistent with the Act, and more than 250 permits have been issued on coastal barriers since the Act passed.

Thank you very much for the opportunity to testify.

Senator BAUCUS. Thank you both.

You have both heard Doctor Sheets say that, in his opinion, there should be no further development of undeveloped areas. Do either of you disagree with that statement?

Ms. NEWSOME. No. It is absolutely true. I think he showed the slides that proved that is the direction we ought to go.

Mr. KEATING. I think if people want to spend their own money——

Senator BAUCUS. Their own money.

Mr. KEATING [continuing]. And throw their money out to sea, fine. But spending taxpayer dollars, I would not agree with that.

Senator BAUCUS. Now, as I understand it, currently people who do develop and build are entitled to a casualty deduction that exceeds 10 percent of their adjusted gross income in non-reimbursed casualty loss. Is that correct?

Ms. NEWSOME. Right. That is correct. And at one point the Department of Interior looked at that issue as a possible way to increase the protection offered by the coastal barrier system, and it is not in their final report, but it is an area that we think is worth looking into and ought to be re-examined.

Senator BAUCUS. Do you have a view on that, Mr. Keating?

Mr. KEATING. Well, we wouldn't support scaling back that tax deduction unless it were offset by some other tax reductions such as providing expanded protections for taxpayers through some of the provisions in the taxpayers bill of rights we didn't get last year.

Senator BAUCUS. You would not favor——

Mr. KEATING. No, we would not favor doing that as a way of raising tax revenue. If you offset the revenue increase with some other tax reduction, then I think that's something that we might be able to support.

Senator BAUCUS. That would save the taxpayers dollars. I'm just curious why——

Mr. KEATING. Well, it doesn't——

Senator BAUCUS [continuing]. You're not in favor of limiting the deductions.

Mr. KEATING. It wouldn't save taxpayer dollars. The people who have had a casualty loss on a barrier island would wind up paying more taxes because the deduction would have been removed.

Senator BAUCUS. Well, it saves dollars in the sense that it would put less pressure on the taxpayers—other measures to raise taxes.

Mr. KEATING. I would agree. If you took that revenue and reduced the tax rates for other taxpayers, that's something we could go along with.

Senator BAUCUS. The National Association of Realtors, in testimony that they submitted, states that if Federal flood insurance is not available in those areas proposed for inclusion in the coastal barrier resources system, it is likely that any development that does occur without the benefit of Federal funds will also not have the benefit of safety margins, as are assured by participation in the national flood insurance program. They say the flood insurance program helps assure more safety. What is your reaction to that, Ms. Newsome?

Ms. NEWSOME. The way the Federal flood insurance program works, if anyone in a community is going to get Federal flood insurance, the community has to adopt building standards that apply to anyone who builds within the community, including those who build in system units. We do know that there is some private flood insurance being offered. We have significant concerns about whether, if those companies were hit with enormous losses from a hurricane, whether they could, in fact, pay. But the communities, themselves, adopt the building codes. It is not tied directly to a particular policy.

Senator BAUCUS. How about the argument that it provides a greater margin of safety? Flood insurance encourages higher standards, and, therefore, a greater margin of safety? That's the realtors' position. Do you agree or disagree with that?

Ms. NEWSOME. Community ordinances required by the flood insurance program provide a greater margin of safety, but there are some places where even that margin of safety is not adequate. And, in fact, there are some areas where we don't think that they should be offering any flood insurance.

Mr. KEATING. I would disagree with that. Let's face it: if these people do development on their own, they're either going to do something that is very cheap and expendable—it could be washed away. Or, if they have to obtain private insurance, I think a private insurance company—not every single time, but most of the time—is bound to be a bit more aggressive than regulators, because their money is at stake. If that house is washed away, the insurance company has to pay the tab. I think with their money at stake, insurance companies will do a better job regulating the structures.

We saw that, with the S & L regulations and the FHA regulations by HUD, when people don't have their own money at stake, they don't tend to do a very good job. That's not to say in every instance that private companies could do a better job, but I think, overall, they would.

Senator BAUCUS. Thank you, very much.

Senator Chafee.

Senator CHAFEE. Thank you, Mr. Chairman.

I want to echo what Mr. Keating said. I'm fairly familiar with the Federal flood insurance program, and if they've got restrictions, I'm not very familiar with them. Certainly there are a lot of homes that have been grandfathered in there that have received flood insurance, and there are no requirements about being up on stilts, or whatever it might be. And furthermore, as we had the testimony from Mr. Sheets, if you get the houses built up, then you've got the wind problem of carrying them away.

So to say the realtors argument, which is suggesting that the Federal flood insurance somehow ensures a sounder structure is nonsense. And certainly it is nonsense when compared, as Mr. Keating said, to what would be required if a private insurer were involved.

I think their testimony has been very helpful. Ms. Newsome, particularly the specifics you point out where we might take action. When we did this in 1982, I remember that it broke down roughly into thirds—one third of the coastline—we're just talking Gulf coast and Atlantic coast—one third roughly developed, one third undeveloped, and one third in these other hands. And, at the time, we felt that if it was in the hands of the State, the Audubon Society, or any other nature-preserving group, that we could let that go. And I was disappointed to read in your testimony that despite this confidence we had in the States and the communities, that apparently they are prepared to go ahead and do otherwise.

The Texas figures you cited stunned me. In Texas, on one of those barrier islands, they were planning to have—of course, they do things in a big way down in Texas—can you find that in your testimony? What page was that?

Ms. NEWSOME. I believe, sir, that you're speaking about the Playa del Rio development, where they were going to put 71,000 units.

Senator CHAFEE. Yes. Here it is on page 13. They step right up to it, don't they? On a 12,000-acre area they are going to have a 71,000-unit project. Not just a house or two, but 71,000 of them. And the public outcry was great—that must be the understatement of the year—and the leases were dropped.

I think that what we want to do is get this legislation through. I see us getting in a thicket there as we start dealing with the local communities that have bought their land for recreation purposes. But those are good suggestions. We appreciate both of you. You've been long-time supporters. I'm glad you've got this coalition, Ms. Newsome. We're going to need them.

Ms. NEWSOME. Well, Senator, we really appreciate the leadership role you continue to play on this kind of legislation. It is very important.

Senator CHAFEE. I want to pay tribute to Senator Baucus. If there is anything that is a long distance from Montana, it is the coastal barrier beaches. He has been a stalwart, as he has in all the environmental areas.

Senator BAUCUS. It's coming. We, in Montana, have Flathead Lake, which is the largest natural freshwater lake west of Mississippi. So we're starting to have our own problems.

Well, the next thing we'll have some legislation in on their beaches, and I'll support it.

Thank you.

Thank you both very, very much. We appreciate the time you've taken. Your testimonies are very valuable. Thank you.

The hearing is now adjourned.

[Whereupon, at 11:55 a.m., the subcommittee was adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record and the Executive Summary of the Report to Congress follows.]

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United States Senate
COMMITTEE ON
AGRICULTURE, NUTRITION, AND FORESTRY
WASHINGTON, DC 20510-6000

October 2, 1989

Max Baucus, Chairman
Subcommittee on Environmental Protection
Senate Committee on Environment and Public Works
U.S. Senate
Washington, D.C. 20510

Dear Mr. Chairman:

I am writing to express my concern about a piece of property owned by one of my constituents, Mr. G.C. Strong, III. It appears that Mr. Strong's property has been included in the Department of the Interior's maps for the Coastal Barrier Resource System. Enclosed please find a copy of his correspondence to me.

I would greatly appreciate your taking a look into this problem. I would also like to request that this letter and Mr. Strong's correspondence be made a part of the record for the hearing which took place on this issue on September 29, 1989.

Sincerely,

Howell Heflin

HH/meg

9-4-89

Dear Sirs,

Recently I started making preparations to build on land I own on the Fort Morgan peninsular in Baldwin county. My family first settled here in the mid-eighteen hundreds and this piece of land has been past down for several generations.

When checking with Baldwin county officals they sent me a copy of FEMA map 015000-0646 showing my land as part of the Coastal Barrie. Therefore I am not eligible for flood insurance. This was done several years ago without my knowledge or consent.

I too am interested in protecting this frail environment. However what is needed is tougher codes on condo development and stoping people from building on postage stamp lots. Also something is urgently needed to stop the coastal erosion or I promise this is one part of Alabama you wont have to represent much longer.

I understand the Coastal Barrie law is up for amendment soon. I expect to hear from you concerning changing the states of my land and protection of our shore line. I am sending copies of this letter to each of my congressional representatives and will call each of you in several days to follow up.

Yours Truley,
H.L. Strong III

STATEMENT OF JOHN TURNER, DIRECTOR, U.S. FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR, BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION, COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, U.S. SENATE, REGARDING THE DEPARTMENT OF THE INTERIOR'S REPORT TO CONGRESS ON THE COASTAL BARRIER RESOURCES SYSTEM

September 29, 1989

Mr. Chairman, I appreciate the opportunity to appear before you today concerning the Report and Recommendations on the Coastal Barrier Resources System (System), transmitted to Congress on January 18, 1989, by the Assistant Secretary for Fish and Wildlife and Parks pursuant to section 10 of the 1982 Coastal Barrier Resources Act (CBRA). The Department of the Interior fully supports these recommendations. In addition to summarizing these recommendations, my statement will provide background on the ecological importance of coastal barriers, as well as provisions contained in the 1982 statute and Departmental efforts prior to release of these recommendations.

THE NATURE OF COASTAL BARRIERS

Section 3(1)(A) of CBRA defines a coastal barrier as:

> a depositional feature (such as a bay barrier, tombolo, barrier spit, or barrier island) that -- (i) consists of unconsolidated sedimentary materials, (ii) is subject to wave, tidal, and wind energies, and (iii) protects landward aquatic habitats from direct wave attack.

When CBRA was enacted in 1982, Congress included only coastal barriers on the Atlantic Ocean and Gulf of Mexico coastlines. These areas constitute one of the longest and best defined chains of coastal barriers in the world. From Maine to south Texas, coastal barriers stretch like protective ribbons along 2700 miles of U.S. shorelines. These barriers absorb ocean energies, buffering associated wetlands and the mainland from daily waves and tides as well as occasional hurricanes and northeasters.

Although coastal barriers are best developed along the Atlantic and Gulf of Mexico coastlines, they exist on all coastlines of the United States. Inventories of coastal barriers completed by the Department of the Interior in 1985 also identified undeveloped coastal barrier units along the Great Lakes, the Pacific Coast (including the States of Washington, Oregon and California), Hawaii and American Samoa.

Coastal barrier habitats and their associated wetlands support a tremendous variety of organisms. Millions of fish, shellfish, birds, mammals, and other wildlife depend on barriers and their wetlands for vital feeding, spawning, nesting, nursery, and resting habitat. Often the highest diversity of wildlife on coastal barriers is found at the edge between marshland and upland, or land and water.

Undeveloped sandy coastal barriers exist in a state of dynamic equilibrium as they constantly respond to the varying assaults of

wind and water. Sand is shared between offshore sand bars, the barrier beach, the dunes, and, over the longer term, the entire land mass of the barrier. As sand is eroded from one part of the barrier, it is deposited somewhere else. During storms, the barrier retreats from the direct attack of the ocean through the overwash process. Large storm waves push through the dunes and sometimes across entire islands, depositing fans of sediment behind the dunes or in the soundside marshes. The overwash process also permits barriers to survive the worldwide rise in sea level by somersaulting backward up the coastal plain.

Coastal barriers are difficult places for human habitation due to this dynamic environment. Structures built too close to the shoreline are quickly threatened by an eroding beach. Hurricanes and northeasters can threaten property virtually anywhere on a barrier. Without associated coastal barriers, large population centers on the mainland would be threatened by the direct assault of the sea.

Prior to World War II, more than 90 percent of the Nation's coastal barrier real estate existed as undeveloped natural areas. That has changed dramatically over the past four decades, however, as increased affluence and Federal subsidies have led to extensive development. Due to the large number of people exposed to potential hurricane storm surges as well as the disaster aid obligations attributable to coastal damage, protection of coastal development is both complex and costly.

ENACTMENT OF THE COASTAL BARRIER RESOURCES ACT

Passage of CBRA (16 U.S.C. 3501 et seq.) in 1982 represented the culmination of several years of study by Congress and the Department of the Interior regarding Federal programs and how they affect the development of coastal barriers. Studies initiated by the Department in 1977 assessed options for modifying about 40 Federal programs affecting coastal barriers, including the National Flood Insurance Program. The results of these studies were released in a draft Environmental Impact Statement (EIS) in January 1980.

In passing CBRA, the Congress specifically stipulated the three objectives of minimizing the loss of human life, the wasteful expenditure of Federal revenues, and the damage to fish, wildlife, and other natural resources associated with the coastal barriers along the Gulf and Atlantic coastlines. The principal mechanism for achieving these objectives was to limit, with certain exceptions, new Federal expenditures and new Federal assistance for development activities within and affecting designated undeveloped coastal barriers units.

Additional provisions in the statute stipulated that no new flood insurance coverage could be provided after October 1, 1983, for any new construction or substantial improvements of structures located on any of these designated units. Enactment of these

provisions signaled Congressional intent to transfer the risks associated with development on coastal barriers to those who choose to live on and invest in these areas.

The CBRA established the Coastal Barrier Resources System, within which the limitations on Federal assistance apply. The System presently consists of 186 undeveloped coastal barrier units totalling 452,834 acres and 666.6 miles of shoreline along the Atlantic Ocean and Gulf of Mexico coastlines.

The units incorporated in the System were based on a listing of undeveloped coastal barriers provided to the Congress by the Secretary of Interior in 1982 prior to enactment of the CBRA. Development of this list predated CBRA and was based on statutory requirements contained in the 1981 Omnibus Budget Reconciliation Act (OBRA). OBRA had specifically required that the Secretary of the Interior designate coastal barriers based on a definition provided in the statute and report to Congress, with recommendations, if any, relating to the term "coastal barrier."

Since the focus of OBRA was to prohibit the issuance of new Federal flood insurance for undeveloped barrier units, the 1982 delineations by the Department focused only on the fastland portion of sand barrier systems where structures could be constructed. However, CBRA extended the flood insurance prohibition to cover all new Federal expenditures and financial

assistance with only certain exceptions which were identified by categories in section 6.

SECTION 10 REQUIREMENTS

In addition to the funding limitations contained in CBRA, section 10 required the Department, in consultation with the States in which System units are located, to prepare and submit to Congress a report containing:

> (1) recommendations for the conservation of fish, wildlife, and other natural resources of the System;
>
> (2) recommendations for additions to, or deletions from, the System, and for modifications to the boundaries of System units;
>
> (3) a summary of the comments received from the Governors of the States, State coastal zone management agencies, other government officials, and the public regarding the System; and
>
> (4) an analysis of the effects, if any, that general revenue sharing grants made under section 102 of the State and Local Fiscal Assistance Amendments of 1972 have had on undeveloped coastal barriers.

On December 5, 1983, the Department published in the Federal Register an outline of the studies it was undertaking to prepare the section 10 report. Public comments on the study plan were accepted through February 1, 1984.

In the spring of 1985, the Department issued a draft map inventory of undeveloped coastal barriers on all U.S. coastlines and a draft text report on conservation alternatives for the System. These documents were made available for public review as part of the

information-gathering process. They did not include recommendations, but provided a range of alternatives that could be used as the basis for recommendations to Congress.

On September 30, 1985, the Department closed the public comment period on the report and inventory. The Department received over 2300 comments on the documents. A wide variety of viewpoints were expressed on various issues, including the possibility of expanding the System to other coastlines, secondary barriers, and additional aquatic habitat. A variety of opinions were also expressed on the conservation alternatives.

In addition to soliciting written public comments through the Federal Register, Departmental representatives met with State and local officials, and attended 26 public meetings or workshops. Various options for expansion were evaluated to increase the Department's understanding of coastal barriers and their locations and status around the Nation.

During March 1987 the Department issued a second draft report containing proposed recommendations to Congress. Public comments on the draft report and proposed recommendations were solicited and accepted for a 90-day period, closing June 23, 1987. More than 6150 individuals commented. Opinions were expressed on each category of recommendations and on many of the geographically specific draft recommendations concerning modifications of existing System units and proposed new units. Summaries of the

comments and the Department's responses are contained in the final report.

The Department also prepared a supplemental Legislative Environmental Impact Statement (LEIS) to assess the specific environmental and economic impacts of the Department's recommendations to Congress. The LEIS represented a supplement to the final environmental statement made available by the Department in 1983. This earlier statement reflected the fact that the 1982 Act had expanded the prohibition on expenditures from flood insurance to encompass all Federal programs that expend funds or provide financial assistance in support of development, unless specifically exempted or permitted by the Act.

The draft supplemental LEIS was released for public comment on February 1, 1988, and the Department announced the availability of the final supplemental LEIS on December 16, 1988. At the same time the Department announced the availability of the final report and recommendations, and the report was formally transmitted to Congress on January 18, 1989, following completion of the NEPA process.

The final report consists of 22 volumes, with four annexes and an Executive Summary. It was compiled under the direction of the Assistant Secretary for Fish and Wildlife and Parks by the Coastal Barriers Study Group, a task force of professionals representing

the National Park Service, U.S. Fish and Wildlife Service, and U.S. Geological Survey.

Volume I of the report describes the System and presents recommendations on conservation and management alternatives. It also includes a description of the delineation criteria used in the study and an analysis of the impacts of General Revenue Sharing funds on the System. Volumes 2 - 22 contain background information about each Atlantic and Gulf State and territory's coastal barriers and coastal programs, maps of undeveloped coastal barriers, and recommendations for specific additions to, deletions from, or modifications of the boundaries of the existing System.

The CBRA and the Department's recommendations include the Atlantic and Gulf coasts only. However, just prior to transmittal of the final report, Congress passed and, on November 1988, the President signed P.L. 100-707 which required the Department to, within three months, prepare and submit to Congress maps identifying the undeveloped coastal barriers along the Great Lakes which may qualify for inclusion in the System. On January 12, 1989, the Department announced the availability of draft maps for public review and comment. The comment period was extended to March 14 and final maps depicting approximately 57,729 acres of undeveloped coastal barriers along the shorelines of New York, Ohio, Michigan, Wisconsin and Minnesota were transmitted to Congress on June 9, 1989.

SUMMARY OF FINAL RECOMMENDATIONS

Additions and Deletions -- The Department recommends that 790,884 acres of coastal barrier lands (fastlands and wetlands) along the Atlantic and Gulf coasts be added to the System. Most of this acreage consists of wetlands. This would represent a significant expansion of the System, which currently contains 452,834 acres and 666.6 shoreline miles. The recommended acreages are based on seven categories summarized as follows:

(1) Definition of Coastal Barriers -- The statutory definition of "coastal barrier" describes the barriers as landforms that consist of "unconsolidated sedimentary materials." Although coastal barriers generally consist entirely of unconsolidated sediments composed of sand or gravel, sediments can sometimes be consolidated or include silt or clay, cobbles or larger rocks.

Areas that contain carbonate-cemented deposits (such as the Florida Keys), areas that consist primarily of silt and clay (such as fringing mangroves and cheniers) and areas that contain discontinuous outcrops of bedrock or coarse glacial deposits have been identified by the Department as functioning coastal barriers even though they do not consist of unconsolidated sedimentary material.

It is important to note, however, that these barriers do conform to the two remaining criteria for coastal barriers contained in CBRA. These criteria are that the unit be subject to wave, tidal, and wind energies and that the unit protect landward aquatic habitats from direct wave attack.

The Department, therefore, recommends that the definition of coastal barriers in the Act be amended by deleting the reference to unconsolidated sedimentary materials.

The Department also recommends that all undeveloped unprotected coastal barrier areas meeting Departmental study criteria be added to the System and that any coastal barrier areas not meeting the criteria that were included in the System in 1982 be deleted from the System.

(2) Geographic Scope -- When CBRA was passed in 1982, Congress included in the System only coastal barriers on the Atlantic Ocean and Gulf of Mexico coastlines. Neither the statute nor the legislative history indicates that Congress intended to expand the System to include other coastlines.

During 1983 - 1985, however, the Coastal Barriers Study Group gathered preliminary information about undeveloped coastal barriers on all U.S. coastlines. Although a large amount of data resulted, the Department did not make specific recommendations about the undeveloped coastal barriers along the Great Lakes, Pacific Coast, Alaska, Hawaii, and American Samoa. The Department indicated it would not complete those studies unless Congress enacted legislation directing it to do so.

Subsequently, the Great Lakes Coastal Barrier Act of 1988 required the Secretary of the Interior to prepare maps identifying undeveloped coastal barriers along the Great Lakes that may qualify for inclusion in the System. As mentioned earlier, maps of the undeveloped coastal barriers along the shorelines of New York, Ohio, Michigan, Wisconsin and Minnesota were provided to the Congress during June of this year.

(3) Associated Aquatic Habitat -- Language contained in CBRA defines an "undeveloped coastal barrier" to include "all associated aquatic habitat, including the adjacent wetlands, marshes, estuaries, inlets and nearshore waters." The existing units in the System include only minimum aquatic habitat in response to the statutory directive contained in OBRA. Since the focus of OBRA concerned Federal flood insurance for structures built on barriers, the Department's 1982 delineations focused on the fastland portion of the barrier where residential development might occur.

The associated aquatic habitat, however, is an essential component of the barrier's ecosystem. This habitat area includes all wetlands (e.g. tidal flats, swamps, mangroves and marshes); lagoons; estuaries; coves between the barrier and the mainland; inlets; the nearshore waters seaward of the coastal barrier, including the sand-sharing system; and, in some tropical areas, the coral reefs associated with nearshore mangroves. These habitats are critically important to many fish and wildlife species, including most of the Nation's commercial fish and shellfish harvest.

The Department recommends that all aquatic habitats associated with the existing units in the System and

those included in the recommended new units be added to the System. In delineating these areas, the associated aquatic habitat is considered to be the entire area subject to diminished wind, wave and tidal energy due to the presence of the coastal barriers. It has been delineated to include up to a 1-mile expanse of open water or a 5-mile expanse of marsh behind a barrier.

(4) **Navigation Channels** -- The draft recommendations issued in 1987 to add the associated aquatic habitat to the System resulted in the inclusion of several Federal navigation channels. The implications of this draft recommendation concerned many commentors, including many State and local officials, due to potential impacts from the loss of Federal funding for channel improvements and port development activities. Although the planning for many of these projects had been ongoing for many years, these projects did not receive an authorization for construction until 1986, with the enactment of the 1986 Water Resources Development Act (P.L. 99-662).

In its final recommendations, the Department has adjusted the recommended boundaries of several individual units to exclude major shipping channels. In addition, the Department recommends specifically excluding all existing Federal navigation channels, including the Intracoastal Waterway, by reference, to allow related navigational activity. We would like to emphasize that this exclusion recognizes the importance of navigational areas, but is not intended to promote development in adjacent areas.

(5) **Secondary Barriers** -- These barriers are located in large, well defined bays (e.g. Chesapeake Bay) or in lagoons on the mainland side of the barrier if a suitable sediment source and sufficient wind, wave, and tidal energies exist. Secondary barriers also protect critical fish and wildlife habitat and provide substantial protection for the mainland during major storms. The Department, accordingly, recommends that secondary barriers be added to the System.

(6) **"Otherwise-Protected" Coastal Barriers** -- Section 3(B) of CBRA specifically exempted barriers which are "included within the boundaries of an area established under Federal, State, or local law, or held by a qualified organization as defined in section 170(h)(3) of the 1954 Internal Revenue Code, primarily for wildlife refuge, sanctuary, recreational, or natural resource conservation purposes." Approximately

one-third (34%) of the Atlantic and Gulf coastlines are included in this category.

The 1982 Report to Congress on Undeveloped Coastal Barriers recommended that these areas be included to ensure that private property owners within the boundaries of these areas (i.e. inholdings) not be granted Federal flood insurance. A review of these areas, however, reveals that most of the Federally subsidized development occurring in otherwise protected areas is necessary to provide public access and accommodate visitors. Most of the barriers are undeveloped, containing either scattered public and private development of a temporary or minimal nature or a single developed area of bathhouses or other facilities to support beach-oriented recreation.

The Department recommends that all inholdings on otherwise protected undeveloped coastal barriers be included in the System. Where accurate maps of inholdings were available, the Department included the inholdings on the proposed System maps. Where such information is lacking, the Department recommends that the inholdings be included by reference.

In addition, the Department recommends that all otherwise protected areas in the existing System be deleted. As a corollary to this recommendation, however, the Department advocates automatic inclusion in the System for any public or privately owned otherwise-protected undeveloped coastal barrier if it is made available for development inconsistent with the purposes of the Act and the long-term preservation of the barrier. It is our view that guidelines can be developed which would ensure compliance with the purposes of the Act. Deviation from the guidelines would trigger inclusion.

(7) **Military and Coast Guard Lands** -- Three military installations and one Coast Guard station were included in the System in 1982. At the same time, however, "military activities essential to national security" and the "construction, operation, maintenance and rehabilitation of Coast Guard facilities and access thereto" were exempted from limitations on Federal funding, following consultation with the Secretary of Interior.

It is the Department's understanding that most military activities along the Atlantic and Gulf coastlines are essential to national security. Compliance with the National Environmental Policy Act and other environmental safeguards is required of the military and

Coast Guard. The Department, accordingly, recommends that no new military or Coast Guard lands be added to the System and that the one Coast Guard and three military units included in 1982 be deleted from the System.

Conservation Recommendations -- The philosophy of CBRA has been to either withdraw or restrict Federal expenditures which encourage development on undeveloped coastal barriers. This philosophy has represented a departure from Federal efforts to protect the natural resources associated with coastal barriers via regulation or acquisition. During the study period, numerous recommendations related to surplus property, land acquisition, regulatory approaches, and land acquisition were considered. Final recommendations for each of these categories are as follows:

(1) Acquisition -- As mentioned previously, more than 90 percent of the Nation's coastal barriers were undeveloped prior to World War II and were generally inaccessible to the general public. That situation has changed, however. Today, the National Park Service administers nine National Seashores along the Atlantic and Gulf shorelines, encompassing approximately 500 shoreline miles and 400,000 acres of land. The Fish and Wildlife Service manages about 50 National Wildlife Refuges along these coastlines.

Although the primary purpose of State and local parks has been to provide beaches for recreation, these areas often include substantial areas of dunes and wetland conserved as open space. Acquisition programs in the coastal States and private sector have accelerated in recent years as competition for remaining undeveloped coastal barrier acreage has increased.

The Department recommends that the Federal Government continue to employ the user fee concept in the acquisition of coastal barrier land. This concept would be similar to that contained in the 1986 Emergency Wetland Resources Act (P.L. 99-645) and the Migratory Bird Hunting and Conservation Stamp Act (16 U.S.C. 718 et seq.), which authorize funding sources for the acquisition of wetlands, such as entrance fees at National Wildlife Refuges and the sale of duck stamps.

In addition, the Department is recommending that State and local land-managing agencies, as well as private organizations, be encouraged to pursue acquisition of coastal barriers as appropriate. If any of the lands acquired become "otherwise protected," the Department recommends that they automatically be deleted from the System and be exempt from the general prohibition on Federal funding. The Department will also be reviewing coastal barrier areas along with other high-resource-value areas when determining acquisition priorities for LWCF budget requests.

(2) Surplus or Excess Federal Property -- CBRA does not include provisions with respect to surplus or excess property despite the significant acreage of Federal holdings on Atlantic and Gulf coastal barriers. The Department recommends that CBRA be amended to require that undeveloped portions of surplus or excess Federal coastal barriers property be included in the System prior to their disposal. Inclusion would be contingent upon a determination by the General Services Administration, in consultation with the Department of Interior, that such lands are appropriate for inclusion in the System. Those lands which subsequently become "otherwise protected" upon disposal are not recommended for inclusion.

(3) Regulatory Consistency -- CBRA restricts Federal expenditures which encourage development in the System; however, it does not preclude Federal agencies from issuing permits or licenses for activities within or adjacent to System units. Permit programs administered at the Federal level concern many activities on coastal barriers and their associated aquatic habitat. Such activities include the construction of causeways, bridges and docks, and infrastructure components, such as utility crossings and wastewater treatment plants. In reviewing permits issued since 1982 for construction in or adjacent to coastal barriers, it has been determined that the largest number have been issued to construct individual boat docks or marinas.

The Department does not recommend that regulatory consistency be incorporated in the implementation of the Coastal Barrier Resources System. Requiring regulatory consistency would depart from the basic premise of the 1982 statute -- that conservation can be achieved by withdrawing Federal assistance for development rather than by increasing Federal regulatory involvement. The major Federal activities which affect the System, such as dredge and fill activities and bridge construction,

undergo appropriate environmental assessments as part of the permit and licensing process.

(4) **Tax Policy Alternatives** -- During the section 10 study period, considerable attention was given to possible amendments to the tax code to conserve undeveloped coastal barriers. This effort was based on the recognition that tax exclusions and deductions significantly affect the allocation of economic resources, including those on coastal property.

However, as a result of the efforts of distinguished Members of this Committee, the 1986 Tax Reform Act reduced the incentives to develop coastal barrier property through such means as elimination of long-term capital gains deductions, limitation of casualty loss deductions, restriction of depreciation to the straight-line method over a longer period of time, restriction of interest deductions, elimination of investment tax credits, and imposition of at-risk limitations on real estate holdings.

Since the 1986 tax reforms, the Department has instead focused on tax incentives to encourage conservation of coastal barrier lands. The Department was assured by the Department of the Treasury that the interpretation of the provisions concerning donations of conservation easements has not adversely affected charitable contributions within the System. Therefore, no amendments relating to taxation are recommended.

(5) **Other Amendments to CBRA** --

(a) Limitations on Federal Funding -- Section 5 of CBRA stipulates the activities for which Federal funding is prohibited and lists exceptions to the prohibition. Although the statutory language makes clear that the limitations on funding apply to areas within the System, questions have arisen regarding whether Federal monies can be used to support a project that is not located in a unit of the System but which might have a substantial impact on a unit in the System.

Since 1982, decisions have been made by Federal agencies indicating that Federal funds could not be expended for certain activities, such as expanded service for a wastewater treatment facility, if the expanded service would be for a unit in the System. The Department concluded that questions of this nature are being answered on a case-by-case basis and that changes to the section 5 provisions are therefore unnecessary. We support this conclusion.

(b) Exceptions to the General Prohibition on Funding -- Section 6 of CBRA lists exceptions to the general prohibitions contained in section 5(a) on Federal expenditures. Federal agencies must consult with the Department prior to obligating funds for any of the exceptions permitted. Section 6(a)(3) allows the expenditure of funds in System units for the "maintenance, replacement, reconstruction or repair but not the expansion of publicly owned or publicly operated roads, structures, or facilities that are essential links in a larger network or system." Although questions have arisen regarding the applicability of this provision, the Department does not believe that any amendments to section 6(a)(3) are necessary.

(c) Essential Line (Utilities) -- Concerns have arisen regarding utility services. A common fear has been the inability to provide services to areas on developed coastal barriers, such as wastewater treatment plants, due to the recommendation to include extensive areas of associated aquatic habitat. This is based on the cost of crossing coastal barrier units in the absence of any Federal financial assistance.

The Department is recommending that section 6 of CBRA be amended for two purposes. The first would be to authorize the use of Federal funds to install "essential lines" through System units where no practicable alternative route exists in order to service one or more developed areas on coastal barriers outside of the System. We believe that this would be environmentally preferable and a less costly alternative to new plant facilities outside the unit. The second would be to provide service to developments within the System from existing lines or future "essential lines" which cross through the System, provided that service can be supplied with no additional cost to the Federal Government. In this situation, if any upgrades are necessary to accommodate service within System units, the Department recommends that such costs be borne by non-Federal parties. We believe this could be environmentally preferable and a less costly alternative to new plant facilities outside the unit.

(d) Dredged Material Disposal -- Section 6(a)(2) of CBRA allows dredged material attendant to existing channel improvements to be disposed of within a CBRS unit subsequent to consultation with the Department of Interior. The Department recommends no change to this section of the law. Dredged material disposal is

already regulated by Federal programs that take fish and wildlife values into account.

(e) Recreational Projects -- No amendments are recommended to section 9(a)(6)(A) of CBRA, which authorizes the expenditure of Federal funds for fish and wildlife conservation and management purposes, including recreational projects within System units. Despite some concerns expressed regarding the use of Federal funds for recreational purposes, it has not been deemed to be an inappropriate expenditure of Federal funds if the general public benefits from such recreational projects which must be consistent with the purposes of the Act.

(f) Federal Agency Compliance and Block Grants -- The monitoring of Federal expenditures from block grants is particularly difficult due to the open-ended nature of the disbursements. The Department, however, does not believe that an amendment is necessary to address block grants since most agencies have incorporated related compliance directives into their regular procedures. To the extent that block grants are provided, the benefits of establishing a detailed monitoring system would be outweighed by the implementation costs.

(g) OMB Certification -- Under the existing provisions of CBRA, OMB is required to annually certify agency compliance with provisions of this statute. The Department recommends that section 7 of CBRA be amended to require each Federal agency to self-certify compliance with the statute's provisions. This certification would be submitted to Congress on an annual basis. The current certification process is cumbersome and OMB advises that it does not have the capability required to audit agency expenditures.

ASSESSMENT OF FINAL RECOMMENDATIONS

As noted previously, the Department released its final supplemental LEIS during December of 1988. This document assessed the environmental consequences of the final recommendations on the Atlantic and Gulf coasts described as the Proposed Action in the

LEIS. The Proposed Action would approximately triple the acreage and add about 423 miles of shoreline to the System.

The LEIS indicates that adoption of the Department's recommendations would result in a reduction, albeit unquantified, in development of the undeveloped coastal barriers proposed for inclusion in the System. This is based on several factors, including the fact that private lending institutions are often unwilling to make loans for development where Federal flood insurance is not available for coastal barriers. Any decline in the rate of development, in turn, would be expected to assist in maintaining the natural geological and ecological characteristics of the barriers.

The effects of reduced or delayed development on natural processes should be greatest in Florida and the Carribean, where large additions are proposed and the largest acreages of potentially developable fastland are available. In the Northeast and Mid-Atlantic States, the proposed additions are mostly secondary barriers, which have a lower suitability for development. Although Louisiana has the largest acreage proposed for addition of any of the coastal States, the vast majority of this acreage is associated aquatic habitat that is generally unsuitable for development. Most of the potentially developable land is in the chenier region of southwestern Louisiana.

The socio-economic effects of the proposal have also been assessed from several perspectives, including the loss of local development monies for municipalities, the potential decrease in market values of property, and, conversely, the savings to the U.S. Treasury due to the withdrawal of Federal subsidies. According to the final supplemental LEIS, approximately 80 percent of the proposed additions, excluding the secondary barriers and the associated aquatic habitat in Louisiana, are located near established communities. Development of these areas would have economic benefits for local markets, employment, and tax bases over the short term. Federal subsidies for post-disaster reconstruction, in fact, could result in even higher levels of development than existed on the barrier before the storm.

The principal economic impact of curtailing Federal flood insurance and other Federal development assistance programs would be expected to be borne by owners and developers of coastal barrier property. Economic impacts would range from probable declines in market value of property to the unavailability of bank financing for individuals wanting to construct personal residences. It is generally recognized, however, that it is difficult to correlate the effects on market values associated with inclusion in the System. According to the final supplemental LEIS, there are no data to indicate whether or not development pressures have increased, thereby increasing property values, on nearby coastal barriers that are not included in the System.

With respect to the overall impacts to local areas, it is likely that local communities under intense development pressure and located adjacent to System units would experience some negative economic impacts. This trend would imply that local communities in Florida (especially the Keys), Puerto Rico, and the U.S. Virgin Islands potentially may experience economic impacts from the proposal.

In enacting CBRA, Congress indicated several purposes for the legislation, including minimizing the loss of human life and wasteful expenditure of Federal funds associated with the development of coastal barriers. The final supplemental LEIS acknowledges that public safety will be improved to the extent that development is limited and due to the fact that fewer people will be exposed to severe storms.

Lastly, that document estimates the potential savings to the Federal Government if the proposal is accepted. The figure is estimated at $997 million over a 20-year period of development. This figure is based on analyses conducted by H. Crane Miller in 1981 concluding that the cost of extending then-current Federal assistance programs to undeveloped coastal barriers was approximately $25,570 per developed acre in 1980 dollars. Assistance included in these estimates were monies for the construction of roads, bridges, airports, and water and sewer systems, as well as Federal flood insurance and disaster relief. The total estimated cost has been calculated by multiplying the

per acre cost by 39,000 acres (the amount of fastlands contained in the proposal).

Replacement costs for post-disaster redevelopment of coastal barriers have been estimated at $53,250 per developed acre. Based on the 39,000 acres of fastlands recommended, these figures would translate to a total replacement cost of $2.08 billion for the proposed additions. This is the amount that could be saved, in addition to the development assistance savings, by foregoing possible post-disaster redevelopment assistance in these areas.

The Department's report does not contain any estimates of the savings, to date, to the U.S. Treasury based on the 186 units included in the System by CBRA. An estimate of these savings can be made, however, by applying the analysis utilized by H. Crane Miller in 1981. Using this approach, savings over a six-and-a-half year period have been estimated at $831 million, based on the 100,934 acres of fastlands included in 1982.

CONSERVATION OF DEVELOPED ATLANTIC AND GULF COASTAL BARRIERS

Most of the actions taken at the Federal level to conserve coastal barriers have focused on undeveloped coastal barriers in the interest of precluding development on these lands. The Department's final recommendations continued that focus since its review of coastal barriers was strictly concerned with undeveloped coastal barriers.

At the same time, however, the Department is cognizant of the "equity" questions that have arisen. There are many coastal areas outside the System that are either developed or are not qualified for inclusion in the System under Departmental criteria which may continue to receive Federal funding for both new development and redevelopment after storms. Continued Federal assistance in these areas raises equity questions among those who are denied such assistance by inclusion of their property in the System.

Growth on developed coastal barriers, as well as reconstruction activities, coupled with the problem of sea-level rise, will contribute to the deterioration of coastal barriers along the Gulf and Atlantic as long as the Federal Government supports development and post-storm reconstruction on these barriers (approximately one-third of the Atlantic and Gulf coastlines). In addition, there is ample evidence to show that Federal subsidies support reconstruction, often increasing the Federal investment in coastal communities that experience repeated destruction by storms.

A final recommendation in the Department's report proposes enactment of legislation directing that a study be undertaken by the Departments of the Interior, Transportation, Commerce, and Agriculture, as well as the Army Corps of Engineers, the Environmental Protection Agency, and the Federal Energy Management Agency, in consultation with the States, to develop additional

options to address Federal subsidies on all coastal barrier areas, both developed and undeveloped, for consideration by Congress. We continue to support this recommendation.

CONCLUSION

In conclusion, Mr. Chairman, let me emphasize the importance of coastal barrier ecosystems to the conservation of fish and wildlife habitat. The 28-volume report and LEIS was the culmination of several years of study by the Coastal Barriers Study Group. We believe that the inclusion of additional acreage in the System will contribute to conserving the undeveloped coastal barrier units and their associated aquatic habitat.

I would also like to emphasize that the report comprises technical recommendations from the Executive Branch and is advisory in nature. Affirmative action must be taken by the Congress in order for any changes to be made to CBRA or the System, including the addition or deletion of units. We would be happy to provide technical assistance to the Committee as you deliberate this proposal, and I will be pleased to answer any questions you may have.

STATEMENT OF
DR. ROBERT C. SHEETS, DIRECTOR
NATIONAL HURRICANE CENTER
NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

SEPTEMBER 29, 1989

Mr. Chairman and Members of the Subcommittees:

My name is Dr. Robert C. Sheets. I am Director of the National Hurricane Center for the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. I appreciate the opportunity to describe the impact of hurricanes on barrier islands and coastal regions.

Tropical cyclones are recognized as nature's most destructive phenomena due to their frequency of occurrence and size. In the Atlantic, and East and Central Pacific, they are called hurricanes. In the West Pacific, they are called tropical cyclones. In 1970, the loss of life resulting from a single tropical cyclone striking Bangladesh has been estimated to exceed 500,000 people with some estimates of as many as 1 million dead. In 1900, a hurricane struck Galveston, Texas resulting in more than 6,000 deaths. This is the largest natural disaster in the history of the United States. By comparison, the great San Francisco earthquake resulted in a little over 600 deaths. Nearly 2,000 deaths were experienced in the offshore islands near

Charleston, South Carolina from a hurricane in 1893. Nearly the same number of deaths resulted from the 1928 hurricane that emptied Lake Okeechobee onto the surrounding communities of Florida. In 1926, a hurricane caused major damage in southeast Florida with estimates of loss of life ranging from near 250 to 500. In 1935, a hurricane striking the Florida Keys killed more than 400 people. The Great New England Hurricane of 1938 resulted in more than 600 deaths and in 1969 Camille struck the Mississippi coast with winds estimated to be near 175 mph and gusts near 200 mph. This hurricane produced a storm surge (dome of water accompanying the storm as it moved ashore) of 25 feet above normal the waves on top of that. More than 250 people lost their lives as a result of Camille.

We have literally thousands of pictures showing remains of houses on barriers islands and coastal regions that were heavily damaged or destroyed by hurricanes. Several of Camille's victims were actually killed in Virginia as a result of flash floods. However, the great majority of the deaths associated with the hurricanes that I have mentioned occurred on barrier islands or the immediate coast of the mainland and were the result of drowning.

The permanent populations of the hurricane prone coastal counties of the United States continue to grow at a rapid rate (figures 1, 2, and 3). When weekend, seasonal and holiday populations are considered, the number of people on barrier

islands - such as at Ocean City, Maryland, Gulf Shores, Alabama and Padre Island, Texas - increase by ten to 100 fold or more. Also, these are subject to inundation from the storm surge associated with the hurricane. It is the rising waters that pose the greatest threat to life. Over the past several years, the warning system has been adequate for providing time for the great majority of the people on barrier islands and along the immediate coast to move inland away from the threat when hurricanes have struck. However, it is becoming more difficult each year to evacuate people from these areas due to the rapidly increasing populations and roadway systems that have not kept pace with the population growth. This condition results in the need for longer and longer lead times for safe evacuation. And, hurricane forecast uncertainties increase as required lead times get longer.

The combination of the risk factor for the growing populations on barrier islands and other vulnerable locations and the uncertainties in the forecasts present major dilemmas for forecasters and local and state emergency management officials. Preparations for a hurricane are expensive. The average warned area for a hurricane forecast is about a 300 mile section of coastline. The average cost of preparation for the hurricane, whether the hurricane strikes or not is more than $50 million for the Gulf coast. This does not include loss of business costs, etc., but just the cost of boarding up homes, closing down businesses, manufacturing plants, evacuating oil rigs, etc. If

the width of the warned area has to be increased by 20 percent due to greater uncertainties in the forecast, the additional cost would be $10 million for each event. If uncertainties in the hurricane strength require warning for the next higher category of hurricane, then there would be major increases in the number of people evacuated and therefore preparation costs.

Of even greater concern to the National Hurricane Center and local and state officials than the economic factor is the protection of life. We and local and state officials of course take economic considerations very seriously. That consideration is not just because part of our mission is to promote the economic well-being of our citizens, but also because people will not continually take expensive actions, which after-the-fact, prove to have been unnecessary. If we consistently overwarn by wide margins, people will not respond and such actions could result in large loss of life. To get a proper response from the general population, we and local and state officials must maintain credibility. To do so, we cannot treat all hurricanes as if they were Camilles or Gilberts! This exaggerated approach may indeed provide maximum protection of life this time, but endanger many more lives the next time when the threat may even be greater.

The hurricane problem is compounded by the fact that the great majority of people (80 to 90 percent) who now live in the hurricane prone areas have never experienced the core of a major

hurricane (Saffir/Simpson scale category 3 or stronger; Herbert, et. al., 1984). Many of these people have been through weaker hurricanes or been brushed by the fringe of a major hurricane. The result is a false impression of the damage potential of the hurricane. This frequently leads to complacency and delayed actions which could lead to large loss of life. That is, people living on barrier islands may be reluctant to evacuate under "blue sky" conditions (situation presently required because of large populations with limited egress facilities) until they see the actual threat (waters rising and winds increasing). The result may be people trapped in those areas as waters cut off escape routes. This situation nearly happened for about 200 people on western Galveston Island during Hurricane Alicia of 1983.

This condition has resulted from three factors. First, fortunately, major hurricanes are infrequent events for any given location. Second, for more than the past two decades, major hurricanes striking the U.S. coast have been less frequent than for the three previous decades. Finally, it has been during this period of low hurricane activity that the great majority of the present coastal residents moved to the coast. The concern now is that we may not fare as well today as we have in the past if hurricane activity returns to the frequencies experienced during the 1940's through 1960's.

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Local governments are faced with serious problems of how to deal with the existing problem and how to avoid exacerbating this problem in the future. For instance, in south Florida alone there are three areas of controversy concerning issues which would help alleviate the current problem of evacuation, but could worsen the problem in the future. These issues involve widening of roads and bridges from the Florida Keys, Marco Island, and elevating the causeway and bridge to Sanibel Island. Indeed, these projects are needed for the protection of the people living in those areas, but such improvements will likely result in amplified growth which compounds future problems.

Gulf Shores, Alabama experienced a major upswing in growth after Frederic (1979). Frederic destroyed the great majority of buildings on the island. Afterwards, new and improved roads, water, sewage and electrical systems were installed. Before Frederic, I believe there was only one condominium on the island. The remainder of the housing was generally single family residents and most of them vacation homes. Last year I counted more than 100 condominium buildings on the island. That is, the population concentration has been increased by factors of 10 to 100 over those present during Frederic. Will we be able to get those people off the island in the event of a major hurricane threat in the future?

Last May, I visited a barrier island called Sandbridge located just south of Virginia Beach, Virginia. The island is

suffering considerable erosion. A new sea wall was undermined and had failed. Some houses were undermined and heavily damaged. With all those factors taking place, just down the road on the same beach was a new house under construction which the builder told me would be selling for about $400,000! As long as people can build in these areas with the economic risk assumed by others, they will likely continue to do so.

In summary, population increases will likely continue along our coasts with a continued upward spiral of economic losses when hurricanes strike (figure 4). These losses now average more than $1.5 billion per year and could be as large as $10 billion if a hurricane like Hurricane Gilbert (1988) were to strike a major metropolitan area such as southeast Florida. More frightening is the potential for large loss of life on barrier islands. If adequate means of evacuation and/or places of refuge are not provided for residents in existing and planned communities, on barrier islands and other vulnerable coastal communities, there will almost assuredly be a significant increase in loss of life due to hurricanes (figure 5).

Policies should be established which not only require environmental sensitivity, but also discourage development where lives may be placed in jeopardy. Part of those policies could be to require that individuals choosing to building in at-risk areas bear all economic risks.

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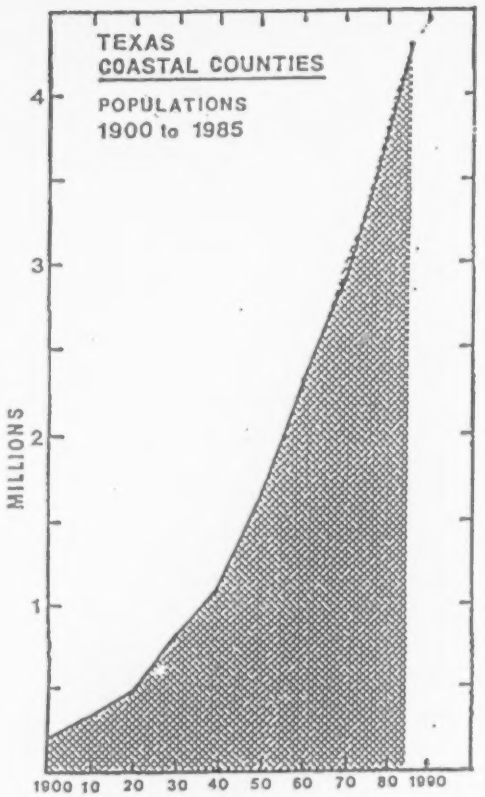
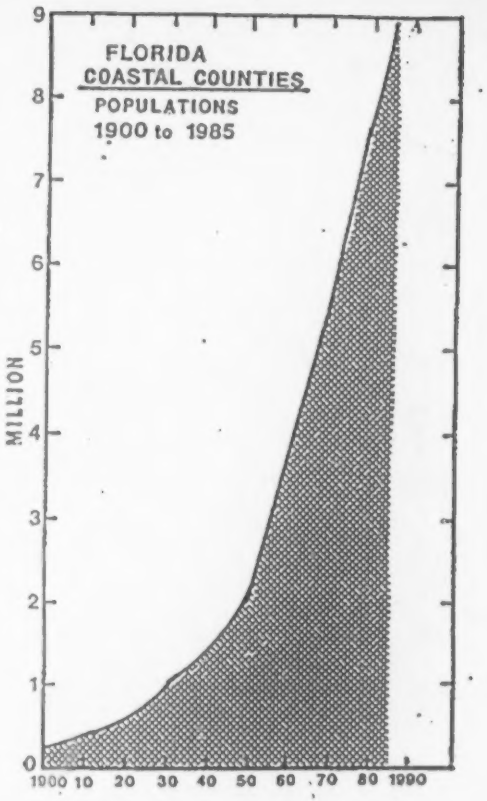
State and local governments should be encouraged to take innovative steps to limit development on coastal barriers and other vulnerable coastal areas. At a hearing before the Subcommittee on Oceanography and Great Lakes on July 19, 1989, land use management was cited as one of the more effective long-term solutions for reducing loss of life and property from hurricanes by Mr. Frank Mancini of the National Committee on Property Insurance, a technical and research organization representing the property and casualty insurance industry.

Thirteen states already utilize setbacks to limit waterfront development as part of their comprehensive coastal management programs. However, in his testimony at that hearing, Mr. John Carey, Deputy Assistant Administrator for Ocean Services and Coastal Zone Management, NOAA, emphasized the need to strengthen site efforts in this area, and called for new emphasis in the national goals as part of the reauthorization of the Coastal Zone Management Act. The protection of life and property in our coastal areas requires all levels of government to work cooperatively and comprehensively if we are to avoid the types of disaster described above.

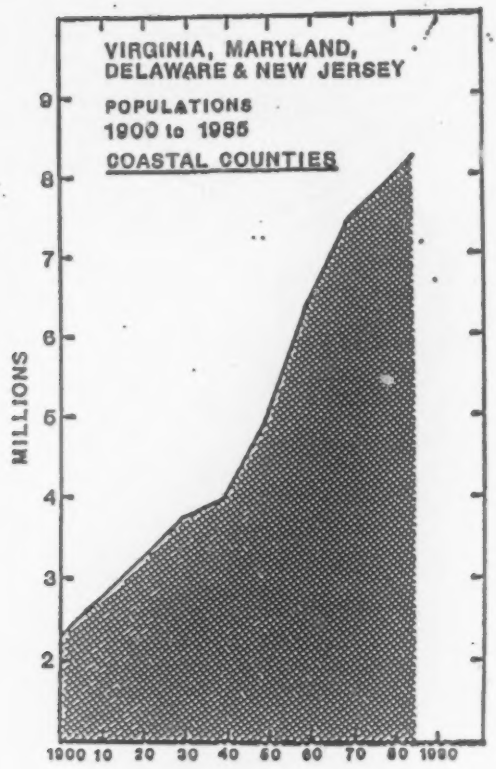
Mr. Chairman, this concludes my prepared statement. I will be happy to answer any questions you may have.



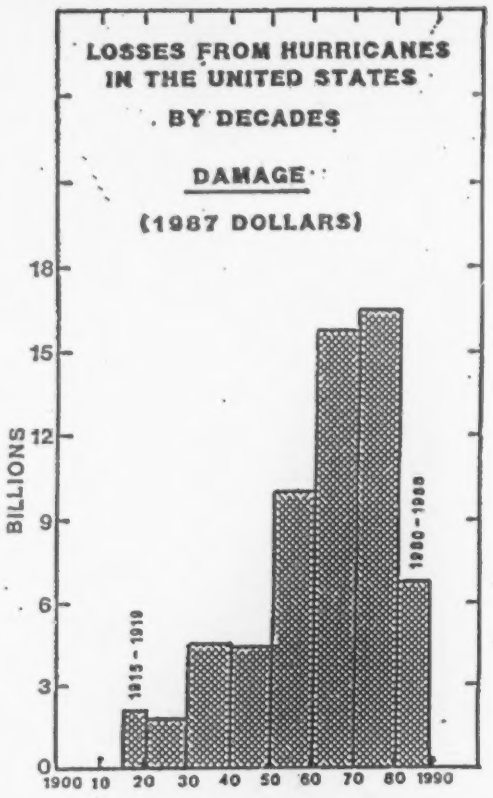
1. Coastal county populations for the state of Texas from 1900 to 1985.



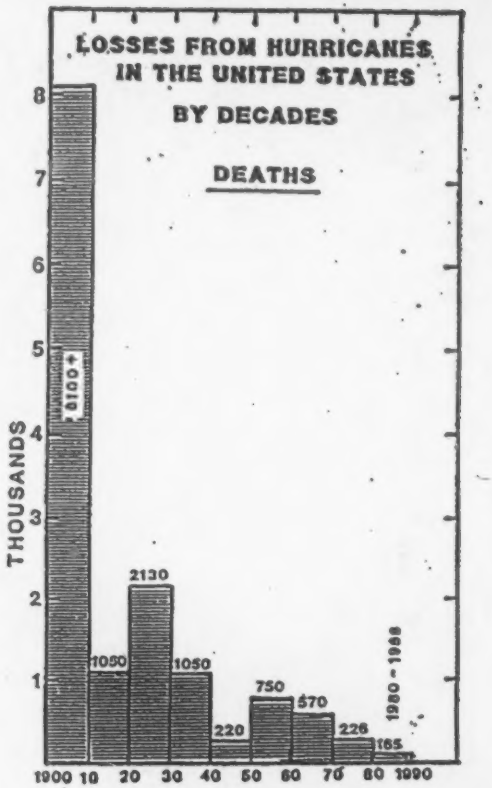
2. Coastal county populations for the state of Florida from 1900 to 1985.



3. Coastal county populations for the states of Virginia, Delaware and New Jersey from 1900 to 1985.



4. Direct damage by decade resulting from hurricanes striking the continental United States from 1915 through 1988. Losses have been adjusted to 1987 dollar values.



5. Deaths by decade resulting from hurricanes striking the continental United States from 1900 through 1988.

1. House located in a cut on a barrier island north of Charleston, South Carolina after Hurricane Hugo, September 1989.

2. Front row houses destroyed and/or moved inland on a barrier island north of Charleston, South Carolina after Hurricane Hugo, September 1989.

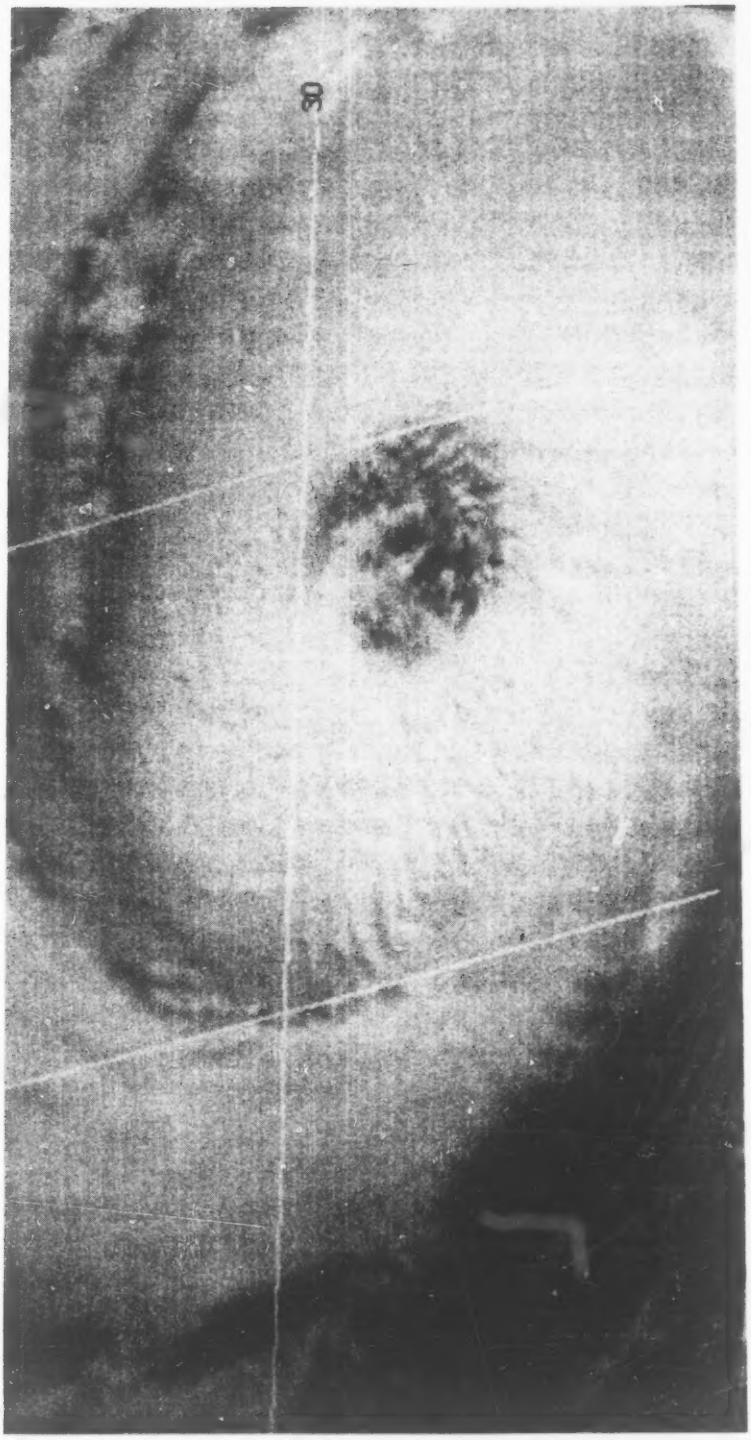
3. Rows of homes destroyed and pushed ahsore south of Myrtle Beach, South Carolina after Hurricane Hugo, September 1989.

4. Barrier island between Charleston and Myrtle Beach, South Carolina after Hurricane Hugo, September 1989.

5. Destruction on a barrier island after Hurricane Hugo, September, 1989.

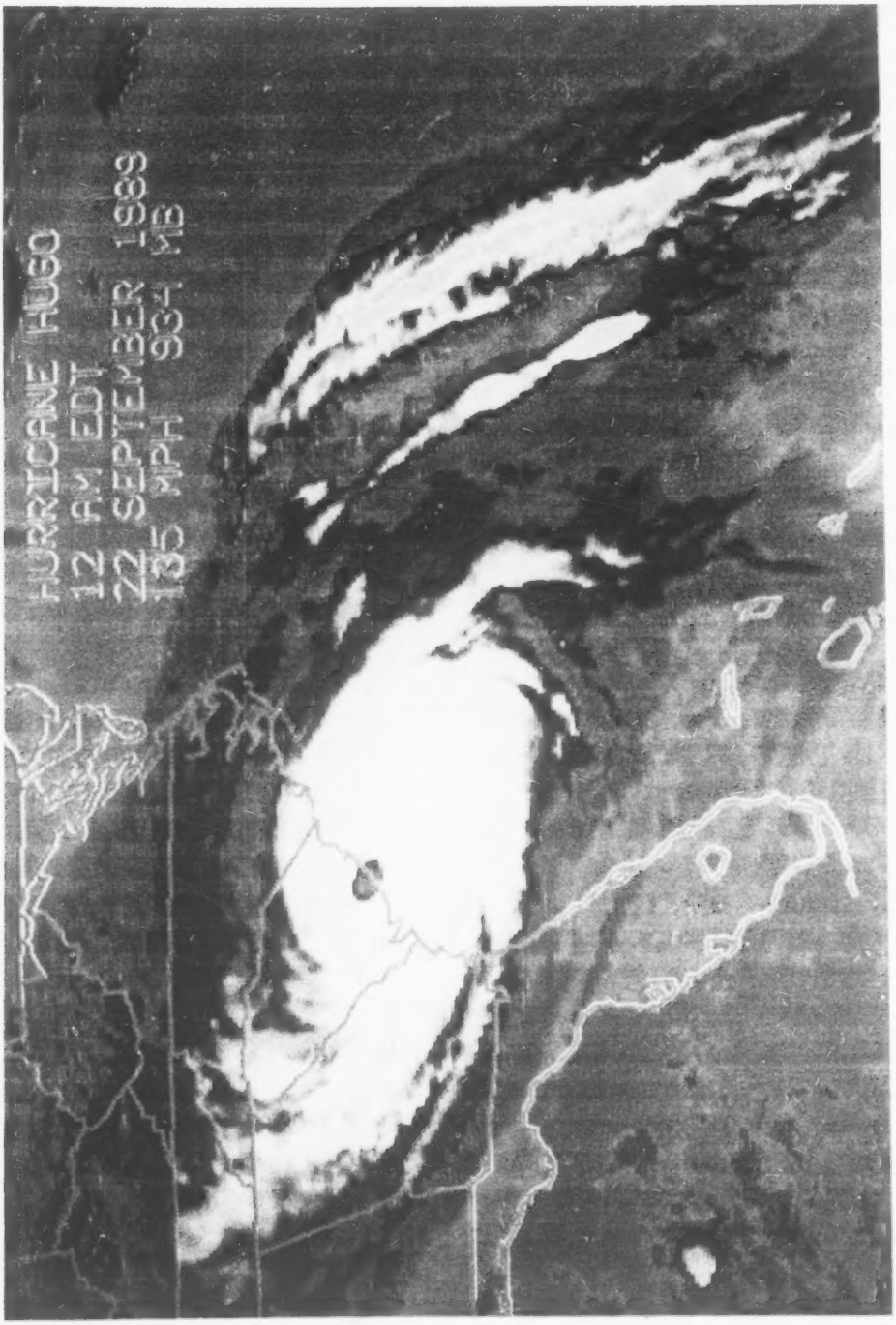
6. Sea walls, jetties and destruction on a barrier island north of Charleston, South Carolina after Hurricane Hugo, September 1989.

7. Lighthouse off of a barrier island north of Charleston, South Carolina after Hurricane Hugo, September 1989. Island moved away from the lighthouse.



HURRICANE HUGO

SEPTEMBER 21, 1989


HURRICANE HUGO
12 AM EDT
22 SEPTEMBER 1989
135 MPH 934 MB

NATIONAL TAXPAYERS UNION

A NONPARTISAN, NONPROFIT ORGANIZATION DEDICATED TO THE PUBLIC INTEREST

325 PENNSYLVANIA AVENUE, SOUTHEAST WASHINGTON, DISTRICT OF COLUMBIA 20003 TELEPHONE: AREA CODE (202) 543-1300

Testimony of David Keating
Executive Vice President, National Taxpayers Union

before the

Subcommittee on Environmental Protection
Committee on Environment and Public Works
United States Senate

on the

Coastal Barrier Resources System

September 29, 1989

Mr. Chairman and members of the Committee, thank you for the opportunity to appear at the hearing today concerning the Coastal Barrier Resources System (CBRS). I represent the National Taxpayers Union, a 200,000-member group that is interested in limiting the burden of the taxpayer.

The Interior Department's report on the CBRS recommends adding almost 800,000 acres to the current 453,000-acre CBRS. Under 1982 legislation, the Federal government is prohibited from subsidizing development on shoreline included in the CBRS on the Atlantic, Great Lakes, and Gulf coasts. Expanding the size of the CBRS would stop unwise federal subsidies for development on these ecologically fragile coastal areas while saving taxpayers up to $9.3 billion in federal subsidies. Congress should stop throwing our tax dollars out to sea by implementing these recommendations.

The National Taxpayers Union strongly backed the Coastal Barriers

Resources Act in 1982; we continued expressing this support in the 1987 Interior Department's public comment phase for the System's expansion; and we hereby reconfirm this support today.

The Coastal Barrier Resources Act of 1982 recognized the fiscal and environmental folly of subsidizing development on barrier islands. Since its inception, the Coastal Barrier Resource System has saved the Federal government more than $800 million. Yet the Federal government still subsidizes development on many unprotected undeveloped barrier islands.

Expanding the Coastal Barrier Resource System Would Save Billions

A study by H. Crane Miller released earlier this year by the National Wildlife Federation and the National Taxpayers Union concluded that "expansion of the existing Coastal Barrier Resources System to include the additional acreage recommended by the U.S. Department of the Interior on the Atlantic and Gulf of Mexico coasts could lead to direct savings to the federal government of between nearly $1.0 billion and $9.3 billion [over the next 20 years alone]. These potential savings represent federal funds that might otherwise be spent under current federal programs if the barriers were developed. These include the major one-time capital costs for urban infrastructure (wastewater treatment, sewers, water supply, water treatment and water distribution, roads, bridges and causeways), and costs for disaster relief, flood insurance subsidies, and shoreline protection over a 20-year period."

The study projects savings only over the next 20 years. Since savings continue well into the future, the estimates are conservative and understated. They also don't include mapping costs, which are not fully reflected in the flood insurance program today, maintenance costs of infrastructure that would be built, and it also excludes some catastrophic expenses from major hurricanes. I have attached Mr. Miller's study to my testimony and respectfully ask that it be entered

into the hearing record.

Other CBRS Recommendations

While the Interior Department did not formally recommend inclusion of Great Lakes barriers into the CBRS, it did draw the maps necessary to include this shore line into the system. The Interior Department identified a total of 63,200 acres on Great Lakes barriers.

If this acreage is added to the CBRS, we estimate that an additional $317 million to $824 million could be saved.

While the Interior Department excludes Defense Department property from its recommendations, we hope that Congress restricts Defense Department activities on barrier islands to genuine national security needs.

If the Defense Department or the Coast Guard uses this land for recreational purposes, imagine how local residents would feel. People would see it as an unfair special privilege for people working for the government. Of course, in the interest of national security, construction on these barrier islands for true military or Coast Guard purposes should be permitted.

Flood Insurance Program Still Running Deficits

Knowing of the Committee's interest in the flood insurance program, I'd like to take this opportunity to provide some additional details on flood insurance subsidies for development on coastal barriers. Even though the National Flood Insurance Program enjoyed a surplus in 1986 and 1987, the program still receives substantial federal subsidies. In 1988 the General Accounting Office reported that there was an annual average operating deficit for the flood insurance program of $65 million each year between 1978 and 1987. During the first eight years of that period, the deficit per policy was approximately $74, although that deficit was reduced to $35 by the 1986 and 1987 surpluses.

I think it is clear that the program is still not on a sound

actuarial footing. During the 1978 to 1987 period, the number and intensity of hurricanes striking the United States was sharply below the average for this century. If the number of severe hurricanes returns to historical norms, it is clear that the flood insurance program would run substantial losses.

Permit Private Development

We believe that Congress should continue to allow development on land included in the Costal Barrier Resources System. Private property rights should remain untouched. If someone wants to develop property on barrier islands, he should do it without federal subsidies. To build permanent structures in such a capricious environment is perhaps unwise; for the Federal government to subsidize such development is irresponsible.

Congress can save property and lives by discontinuing unwise subsidies for development near the coast on undeveloped barrier islands. Without federal subsidies, developers will think twice before building in such a temporary, hostile environment. Consequently, fewer properties will be constructed in risky areas that are often threatened by major storms.

The National Taxpayers Union believes that expansion of the CBRS would save the federal government billions of dollars, protect property and lives on both barrier islands and the mainland, and preserve the barrier islands' pristine environment. With the national debt racing past $2.8 trillion, we can ill afford to pass up an opportunity to save the federal government up to $9 billion.

dk20:17

Working for the Nature of Tomorrow.

NATIONAL WILDLIFE FEDERATION

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Statement
of
Sharon Newsome
Vice President, Resources Conservation Department
National Wildlife Federation

regarding
Improvements to the 1982 Coastal Barrier Resources Act
Before
the Subcommittee on Environmental Protection
of the
Senate Environment and Public Works Committee
September 29, 1989

Presented on Behalf of the Following Organizations:
American Littoral Society
American Oceans Campaign
Audubon Society of Rhode Island
Center for Marine Conservation
Coast Alliance
Committee To Preserve Assateague Island
Conservation Law Foundation of New England
Environment Council of Rhode Island
Florida Wildlife Federation
Frontera Audubon Society, Texas
Friends of the Earth/Environmental Policy Institute/The Oceanic Society
Great Lakes United
Michigan United Conservation Clubs
Mision Industrial de Puerto Rico
National Audubon Society
National Audubon Society -- Great Lakes Region
National Parks and Conservation Association
National Wildlife Federation
Natural Resources Council
North Carolina Coastal Federation
Oregon Natural Resources Defense Council
Save The Bay
Sierra Club
South Carolina Wildlife Federation
Texas Environmental Coalition
The Wilderness Society

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IMPROVEMENTS TO THE 1982 COASTAL BARRIER RESOURCES ACT

Chairman Baucus, Senator Chafee, and members of the subcommittee, thank you for the opportunity to testify on the 1982 Coastal Barrier Resources Act (CBRA) and the Interior Department's final recommended changes to it. My name is Sharon Newsome, and I am Vice-President of Resources Conservation for the National Wildlife Federation. The Federation is the nation's largest non-profit conservation organization, with over 5.8 million members and supporters, and affiliates in 52 states and territories. I am also testifying on behalf of the American Littoral Society, American Oceans Campaign, Audubon Society of Rhode Island, Center for Marine Conservation, Coast Alliance, Committee to Preserve Assateague Island, Conservation Law Foundation of New England, Environment Council of Rhode Island, Florida Wildlife Federation, Frontera Audubon Society -- Texas, Friends of the Earth, Environmental Policy Institute, The Oceanic Society, Great Lakes United, Michigan United Conservation Clubs, Mision Industrial de Puerto Rico, National Audubon Society, National Audubon Society -- Great Lakes Region, National Parks and Conservation Association, Natural Resources Defense Council, North Carolina Coastal Federation, Oregon Natural Resources Council, Save The Bay, Sierra Club, South Carolina Wildlife Federation, Texas Environmental Coalition, and The Wilderness Society. Many of these organizations played instrumental roles in working to pass the Coastal Barrier Resources Act of 1982 and all have had a long-term interest in the protection of this nation's coastal resources.

It is a pleasure for me to testify before this subcommittee again on this important issue. This hearing is especially timely in the wake of Hurricane Hugo which served as a tragic reminder of the folly of building along the nation's shoreline. Nearly 50 people were killed in this storm. Hugo's final price tag has not yet been tallied, but early estimates predict that damages in South Carolina, the U.S. Virgin Islands, and Puerto Rico could be in the neighborhood of $10 billion. American taxpayers will have to pay for all disaster relief assistance and any federal flood insurance loss claims that exceed the $500 million currently in the National Flood Insurance Fund. As a result, it is now more critical than ever to re-examine whether it is appropriate for the federal

government to promote similar future disasters by continuing to encourage development along the nation's undeveloped coastal barriers not yet included within the Coastal Barrier Resources System (CBRS or System). Hugo's reminder, added to the current concern over wetland loss, coastal pollution, global climate change and an enormous federal deficit, makes legislation to expand and strengthen the System especially laudable and appropriate.

The Functions and Value of Coastal Barriers

The subject at hand is coastal barriers -- the islands, spits, beaches, and wetlands lining the perimeter of this country. As the front line of defense against the ocean's destructive wind, wave and tidal energies, coastal barriers live up to their name by buffering mainland communities and adjacent aquatic habitats from otherwise devastating storm, erosion and flood damages.

These landforms respond to the forces of wind and water by constantly accreting and eroding in a dynamic process that ensures their continued existence. Storms borrow sand from barrier dunes; this same sand is returned to the dunes by fair weather waves. Individual coastal barriers are linked together in a larger sand sharing system which distributes sand up and down the coastline in the direction of the prevailing winds. Unlike other landforms, the mobility of coastal barriers is essential for their survival.

Coastal barriers provide essential spawning, feeding and nursery grounds for a diversity of fish and wildlife species, including more than 20 federally endangered or threatened species. Many of these species use the wetlands which form on the protected landward side of coastal barriers -- one of the most productive ecosystem types in the world. In fact, more than two-thirds of this nation's commercially important fish and shellfish rely on these areas for food or shelter during some portion of their lives. It is estimated that coastal wetlands may produce as much as $5 billion worth of these fish and shellfish each year. Millions of waterfowl and other birds also visit these wetlands in their biannual migrations.

In addition to providing critical habitat, coastal barrier wetlands perform many other valuable functions. Wetland vegetation helps reduce erosion by binding sediment and slowing water flow. These areas also filter toxins and excess oxygen-depleting nutrients which would otherwise pollute coastal waters.

Impacts of Development on Coastal Barriers

Environmental Impacts: Development of coastal barriers, however, interferes with these important natural processes. Erecting structures on these landforms effectively "straitjackets" them, inhibiting their natural migration and disrupting the natural movement of sand along the shoreline. Given their unstable nature, development on coastal barriers often results in a commitment to protect this development from inevitable erosion and flooding. This is often accomplished through structural stabilization projects, such as seawalls, groins, and jetties, which are costly, only temporarily effective and often intensify the problem elsewhere.

Groins, fingerlike projections built perpendicular to the shore to trap sand, build up one stretch of beach by starving downstream beaches. Robbed of their sand source, these areas begin suffering from increased erosion. Seawalls built to stabilize beaches cause increased erosion in front of the structure, eventually undermining the wall itself and requiring the construction of an even bigger seawall to protect the beach.

Although beach renourishment provides a somewhat less destructive alternative to protecting ill-fated development, these projects too carry an incredibly high price tag while providing only a temporary reprieve from continued erosion. A recent study by coastal geologist Orrin Pilkey found that only 17 percent of 90 renourishment projects along the Atlantic and Gulf Coasts lasted more than 5 years. Despite this poor success rate, Americans have spent more than $8 billion over the last 25 years pumping sand onto eroding beaches.

Urbanization of coastal barriers also destroys critical fish and wildlife habitat. Five species of sea turtles are now considered endangered or threatened due, in large

part, to the loss and disturbance of sandy beach habitat which they require to lay their eggs. Moreover, despite their unquestionable value to wildlife, already more than half of the nation's original coastal wetlands have been destroyed. The National Marine Fisheries Service has estimated that destruction of these areas between 1954 and 1978 cost more than $200 million in annual fisheries losses. According to the U.S. Fish and Wildlife Service, urbanization is responsible for more than 90 percent of the coastal wetland losses directly attributed to human activities.

Nearshore water quality is also degraded from the pollution generated by shoreline development. Storm run-off carrying pesticides and fertilizers from urban lawns and golf courses, sewer discharges, and petroleum-based pollution from roads drains into coastal waters, impacting important fisheries and other resources. Such non-point pollution has resulted in the contamination of over 40% of the nation's shellfish beds.

Public Safety Impacts: In addition to these environmental damages, development of coastal barriers also results in major public safety costs. Because they are subject to flooding, erosion, sea and lake level rise, hurricanes, tsunamis, and other destructive storms, coastal barriers are very dangerous places to live. More than 13,000 people have died in hurricanes in the United States since 1900. Despite these hazards, however, people continue to flock to the shoreline to live, causing coastal populations to grow at a rate of three to four times higher than in the rest of the country. By next year, over 75% of the nation's population is predicted to live within 50 miles of a marine or Great Lakes coast. In Florida alone, 3,000-4,000 people move to the coast to live each week!

Even on coastal barriers where hurricanes have struck, new growth continues unimpeded. For example, in Galveston, Texas, home to America's greatest natural disaster (over 6,000 people died in the 1900 Galveston hurricane), annual rates for new construction increased from $30 million in 1982 (prior to Hurricane Alicia in 1983) to more than $150 million in 1985.

Increased coastal population density greatly exacerbates evacuation problems

during hurricanes and other coastal storms. This is especially true on coastal barriers where evacuation routes are typically few in number and vulnerable to overwash in the mildest of hurricanes. The problem is further compounded by the fact that a 20-year dearth of major hurricanes (winds exceeding 130 mph) has left 75% of coast-dwelling Americans with little or no hurricane experience. Although the standard National Weather Service evacuation warning is given only 12 hours prior to hurricane landfall (and with only a 60% accuracy), studies have concluded that no coastal county in Florida can evacuate in less than 15 hours. And in the Florida Keys where over 65,000 people will have to drive 150 miles and cross 47 vulnerable two-lane bridges to achieve the safety of the mainland, it is predicted that complete evacuation could take as much as 36 hours.

Economic Impacts: Burgeoning coastal populations and the accompanying growth in coastal property values drastically increase property damages from storms. Statistics from the National Oceanic and Atmospheric Administration show that average property losses from storms rose from $300 million per year during the first third of this century, to a current annual rate of $2.4 billion. This figure is expected to rise to $5 billion annually by the year 2000. Computer models predict that in a catastrophic loss year, the federal flood insurance policies covered under the National Flood Insurance Program could suffer losses as high as $3.5-$4 billion. The All-Industry Research Advisory Council echoed this ominous prediction in a recent report in which it predicts that it is now possible for this country to suffer two $7 billion hurricanes in one year. Such an event, the report concludes, would cause serious economic damage to the insurance industry and major market dislocations.

The federal government, courtesy of taxpayer dollars, pays for a large chunk of these damages through the more than 50 federal disaster assistance programs. Between 1953 and 1985, about 90 percent of all federal disaster declarations were for coastal and riverine flood-related disasters. And according to the Federal Emergency Management Agency, during the ten-year period 1979-1988, federal agencies spent $6.5 billion for these disasters.

The demand for and costs of coastal development protection will be seriously

exacerbated by impending sea level rise. In its July 1988 study, Greenhouse Effect, Sea Level Rise and Coastal Wetlands, the EPA predicts an average relative sea level rise of between 4.5 and 7 feet globally by 2100. In low-lying areas such as coastal barriers, even a small increase in sea level can translate into shoreline retreat of hundreds of feet, making development there even more vulnerable to erosion and flood damages. This problem is further complicated by the fact that the structural stabilization projects built to protect shoreline development from this sea level rise will prevent the natural landward migration of coastal wetlands. The EPA predicts that this will result in a 10-20 percent increase in coastal wetland loss from drowning over the next century.

To make matters even worse, scientists are now predicting that the same greenhouse effect which is bringing us sea level rise, will also cause a marked increase in storm intensity, perhaps as much as 40-50 percent, making hurricanes with winds of 225 mph a realistic possibility. In comparison, the most intense storm on record, 1988 Hurricane Gilbert, had winds of only 175 miles.

The Coastal Barrier Resources Act of 1982

In 1982 Congress addressed the severe environmental, economic and public safety costs of coastal barrier development with the passage of the Coastal Barrier Resources Act. The goals of the Act are simple: to minimize the loss of human life, the wasteful expenditure of federal revenues, and damage to the fish, wildlife and other natural resources associated with coastal barriers.

To accomplish these goals, the Act established the 186-unit Coastal Barrier Resources System along the Atlantic and Gulf Coasts, encompassing 452,834 acres and 666 miles of shoreline. New development within the System is discouraged through a ban on new flood insurance under the National Flood Insurance Program, and on funding for sewers, roads, bridges, Federal Housing Administration and Veterans Administration housing loans, utilities and other infrastructure. The Act does not prohibit state, local or privately-funded development within the System but simply takes the financial burden of risky coastal development off of the federal taxpayer and

places it on the developer. Areas put into the System qualified as undeveloped by containing less than one structure per five acres.

The realization of the magnitude of federal development subsidies in coastal areas was the impetus for denying federal financial assistance to discourage coastal barrier development. A study conducted by H. Crane Miller in 1981 examined coastal development in nine communities adjacent to four national seashores. This study concluded that the federal government spent approximately $50,000 per developed acre in 1980 dollars subsidizing the construction of bridges, sewers, roads, housing, shoreline protection projects, water supply, and wastewater treatment facilities, and disaster relief and flood insurance claim payments. Extrapolating from this research, Miller concluded that by enacting the 1982 Coastal Barrier Resources Act, the federal government could save between $4.1 billion and $11.2 billion over a twenty-year period, depending on the predicted density of development.

How the 1982 Act Has Worked

In a July 1989 study, Jones and Stolzenburg of the National Wildlife Federation examined the amount of development that had occurred within the System since 1982 by comparing 1982 aerial photographs of the units with more recent photographs. In their paper, "Building in the Coastal Barrier Resources System" (Coastal Zone '89), they reported that 594 structures had been built within System units after the passage of CBRA, over half of these in Florida. It is not known, however, how many of these structures were built within the one-year grace period after CBRA's enactment during which federal flood insurance was still available.

Although CBRA's federal funding limitation clearly has not prevented all development within the System, it appears to have helped limit significantly the density of development in CBRS units. According to Jones and Stolzenburg, the density of structures within the System has increased only 0.006 structures per acre of fastland since 1982. In their paper, they compare the densities of North Bethany Beach, the CBRS unit with the highest density, and Fire Island, New York, a barrier island developed prior to CBRA's enactment. North Bethany Beach's density of 0.21

structures per acre of fastland in 1986 was significantly lower than that of Fire Island, which in 1973 supported 3.4 structures per acre. In addition, of the 157 units examined, only 10 of them had experienced major development of 10 or more structures since 1982. I have attached a copy of this study to my testimony and ask that it be included in the record.

Although CBRA appears to be effective in providing a disincentive for coastal barrier development, the fact that CBRA has not completely discouraged all development within the System indicates that strengthening amendments to the Act would also be useful in any bill to expand the System.

Expansion of the Coastal Barrier Resources System

When the Act was passed in 1982, Congress recognized that it had not included all eligible areas within the System or provided complete protection for System units. So in Section 10 of the Act, Congress directed the Interior Department to conduct a study of all eligible areas and to recommend measures to increase the conservation of System resources. After six years and the release of draft reports in 1985 and 1987, the Department delivered its final recommendations to Congress in December 1988.

In its 1985 draft inventory of areas eligible for inclusion within the System, the Interior Department identified more than 2500 miles of shoreline and 5.8 million acres of potential System units on the Atlantic, Gulf, Great Lakes and Pacific Coasts. This acreage included eligible military and Coast Guard lands, as well as federal, state, and local parks, wildlife refuges and recreation areas. In its final report, however, the Department only recommended the addition of 423 miles of shoreline and 790,000 acres along the Atlantic and Gulf Coasts. The National Wildlife Federation and the other conservation groups for which I testify today strongly support the expansion of the System to include **ALL** eligible coastal barriers on **ALL** four of America's coastlines, and the strengthening of the Act to provide maximum protection of these System resources.

The National Wildlife Federation and the National Taxpayers Union recently commissioned Miller to calculate the amount of federal savings which could be obtained through expansion of the System to the remaining eligible areas on the Atlantic, Gulf, Great Lakes and Pacific Coasts. In **Turning the Tide On Wasted Tax Dollars** (April 1989), Miller found that the federal government could save between $1.3 billion and $10 billion over a twenty year period if the Atlantic and Gulf coast areas proposed for inclusion in the Interior Department's final recommendations, the Great Lakes areas identified by Interior in the January 1988 draft maps, and the unprotected, undeveloped Pacific Coast coastal barriers identified in Interior's 1985 draft inventory were included within the System.

Comments on the Department of the Interior's Final Report to Congress

The following are our comments on the specific recommendations made by the Interior Department in its final report to Congress, and our proposals for improvements to the Act.

Interior Department Recommendations That We Oppose

Several of the recommendations made by the Interior Department would serve to decrease the acreage included within the System and lessen the protection offered by the Act. We strongly oppose these recommendations and urge the Committee to reverse or omit them in any Senate legislation to amend CBRA. Specifically, we disagree with the Department's:

Failure to Expand the System to the Great Lakes and Pacific Coast: The National Wildlife Federation and many of the other organizations endorsing this testimony have actively worked on the System designation of undeveloped coastal barriers along all four of America's coasts -- Atlantic, Gulf, Great Lakes and Pacific -- since the System's creation in 1982. **As a result, we strongly oppose the Interior's failure to propose the inclusion of eligible Great Lakes areas within the System and the mapping of all Pacific Coast areas which meet the criteria for CBRS designation.**

The coastal barriers along these two coastlines deserve and need the System's protection just as Atlantic and Gulf coast barriers do. Although not threatened by hurricanes or sea level rise, the Great Lakes shoreline suffers from extreme and unpredictable fluctuations in lake levels which make development there both risky and costly. It was estimated that the record high lake levels of 1985-86 may have cost as much as $500 million in property damages. Many of the shoreline areas which were under water in 1985, however, are being developed now. In addition to seasonal and annual lake level fluctuations, the Great Lakes are also plagued by storm surges and seiches -- when wind blowing across a lake causes a temporary build-up of water at one end of the lake -- which can cause severe flood damages to shoreline development. By guiding new construction away from these hazard-prone shore areas, System designation will help reduce costly property damage from high lake levels in the future.

Although the Pacific Coast has not yet achieved the population density plaguing the Atlantic and Gulf Coast, the coastal barriers along the Pacific Coast are suffering from intense development pressures combined with fierce winter storms and increasing erosion. According to the EPA, relative sea levels along the Pacific Coast will rise between 4 and 7 feet in the next 100 years. This will greatly exacerbate erosion and cliff collapse problems. Furthermore, the barrier spits and bay-mouth barriers of the Pacific Coast shelter wetlands which provide critical staging areas for both adult and juvenile migrating salmon and other anadromous fish. Protection of Pacific Coast barriers within the System will help prevent an increase in the number of structures in the path of rising seas and ensure habitat for important fish and wildlife species.

It does not make sense, nor is it equitable, for American taxpayers to withhold subsidies supporting development on Atlantic and Gulf coastal barriers while continuing to subsidize environmentally damaging and economically unsound coastal development along the Pacific and Great Lakes shorelines. Moreover, by continuing to provide financial incentives for development along these coastlines, the federal government is undermining state coastal programs attempting to wisely manage

shoreline construction. According to the Turning the Tide report, the federal government could save $1.5 billion through inclusion of the eligible areas on these coasts within the System.

Exclusion of Military and Coast Guard Lands: The System currently includes 4 units containing military and Coast Guard lands, encompassing 15,000 acres and 42 miles of shoreline. Activities in these units which the Department of Defense considers to be essential for national security are exempted from CBRA's federal funding prohibition under Section 6.

The Interior Department has identified another 29 units including 30,000 acres and 42 shoreline miles along the Atlantic and Gulf coasts that qualify for System designation. The Department's final recommendations, however, would delete all existing military and Coast Guard lands from the System and not include any of these new areas. Interior's justification for this exclusion is that all activities occurring on military and Coast Guard lands are essential for national security and, therefore, these areas do not need to be included.

The Defense Department's proposal to build a beach clubhouse on military lands at Camp LeJeune in North Carolina (unit L05), although never carried out, clearly indicates, however, that not all defense spending in System units is necessary for national security. Another more recent example of non-essential military development that runs counter to the goals of the Act is the proposed construction of a commercial spaceport on the Eglin Air Force Base (unit P31) in Florida.

If military and Coast Guard lands are excluded from the System, such development in these areas would be able to take place courtesy of federal tax dollars despite the fact that construction in these areas is known to be risky and environmentally detrimental. Publicly sponsored development is just as destructive to coastal barriers as privately funded development, so the federal government should be held to the same standards that private citizens are required to meet. We have seen with Defense nuclear facilities that exemption from environmental laws merely increases problems later. We should not repeat that mistake with the CBRA.

We, therefore, recommend that all existing military and Coast Guard lands be retained within the System and that the additional military and Coast Guard areas identified as eligible for inclusion by the Interior Department be added. In addition, we propose that a provision be added to the Act clarifying what types of military activities truly qualify as essential to national security and what activities do not.

Failure to Include "Otherwise Protected" Areas: The Act currently excludes all areas which are "included within the boundaries of an area established under Federal, State, or local law, or held by a qualified organization as defined in section 170(h)(3) of the Internal Revenue Code of 1954, primarily for wildlife refuge, sanctuary, recreational, or natural resources conservation purposes." These areas comprise about one-third of the coastal barrier acreage on the Atlantic and Gulf Coasts.

The Interior Department examined the possibility of including these areas into the System in its 1985 draft report to Congress and identified the otherwise protected areas on all four coasts eligible for inclusion within the System. In defense of including these areas, the Department cited the recommendation made by the Interior Secretary in his 1982 Report to Congress on OBRA which discussed the "difficulty in determining whether protection is actual or permanent...and the unreasonable inconsistency in the treatment of undeveloped coastal barriers created by the exclusion [of otherwise protected areas]."

In its final 1988 report to Congress, however, the Department recommended the continued exclusion of these areas, as well as the deletion of all otherwise protected areas inadvertently put into the System in 1982 and units which became otherwise protected in the future. This decision was based on the Department's new assertion that most federally-subsidized development in otherwise protected areas is necessary for public access and visitor accommodation. The Department did, however, recommend the automatic inclusion of any otherwise protected area which was made available for development inconsistent with the purposes of the Act and the long-term conservation of the barrier. It also proposed that System designation be extended to

privately-owned inholdings within otherwise protected areas.

The Act already contains exemptions for appropriate activities occurring within otherwise protected areas, such as projects for recreation, fish and wildlife habitat enhancement, and scientific research, as long as they are consistent with the purposes of the Act. As a result, we believe that if these areas are truly protected as their title would suggest, then System designation would not inhibit any normal activities within their boundaries. If, however, the protection provided for a particular area was inadequate, then CBRS designation would be a deterrent against inappropriate uses of this area.

A good example of this is in Texas where state agencies have a checkered past with the management of the state's huge tracts of coastal aquatic habitat. Several years ago, the Texas Parks and Wildlife Commission leased 79 acres of golden-cheeked warbler habitat in the Meridian State Park for the proposed development of a golf course. More recently the Texas General Lands Office (GLO) attempted to lease the 216-acre Brazos Island State Recreation Area for development within Playa del Rio -- a proposed 12,000 acre, 71,000 unit development project. Fortunately, in both instances, public outcry was great and the leases were dropped.

In 1987, Interior ruled that coastal lands managed by the Texas School Land Board (SLB) or the GLO did not qualify as otherwise protected. In response, the SLB and GLO promulgated rules specifically granting all state areas identified in Interior's 1987 draft System inventory (nearly 200,000 acres) the protective status which would qualify them as otherwise protected under CBRA. Given the state's poor track record and that these rules were developed simply to exclude these lands from the System, one must be skeptical about the degree of protection these lands will actually receive.

There are numerous other case studies of inappropriate development which has occurred or been proposed within the boundaries of otherwise protected areas. Foremost in this category is Gulf Shores State Park in Alabama where a hotel and convention center were constructed within park boundaries prior to 1982 and currently receive federal flood insurance. Another example is Assateague National Seashore,

where non-tidal wetlands are currently being filled and paved for campground pads and the once-permeable two-lane campground road has been straightened, widened and repaved with the hopes of attracting additional visitors. On the same island at the Chincoteague National Wildlife Refuge, there is an on-going debate over whether to sacrifice refuge habitat on the island to build an enlarged visitors center and several maintenance buildings or to locate these structures on mainland refuge property where they would cause less environmental damage and be less threatened by hurricanes and sea level rise. The town of Chincoteague is also pressuring the refuge manager to rebuild a road and parking lot which have already been washed out several times and lie adjacent to habitat for the endangered piping plover.

Additional examples include Plum Island National Wildlife Refuge and Parker River National Wildlife Refuge in Massachusetts where it took continued pressure from conservation groups to prevent the construction of new visitor centers and other associated buildings on the barrier islands themselves rather than on adjacent mainland sites. Although these incidents were satisfactorily resolved, federal policy should not be to rely on public outrage to prevent federally-subsidized and environmentally destructive development within the nation's parks and refuges.

It is clear that so-called otherwise protected areas are not safe from environmentally damaging and economically unsound development. **We, therefore, recommend that the Act be amended to include all eligible otherwise protected areas within the System.** Adding otherwise protected areas to the System would provide them with another layer of needed protection and guarantee that federal taxpayers were not underwriting the destruction of the parks, seashores, refuges and recreation areas they love. System designation would not prevent the construction of needed interpretive and recreation facilities, but would simply ensure that such development was consistent with the goals of CBRA .

Exclusion of Major Navigation Channels: An exemption in Section 6 of the Act currently insures continued federal funding for the "maintenance of existing channel improvements and related structures, such as jetties." The Department, however, has recommended the expansion of this exemption to allow federally funded improvement

of existing federal navigation channels and related structures. **We oppose this exemption for federal navigation channel expansion.**

Creating additional exemptions which allow for increased development within the System runs completely counter to CBRA's goals and threatens to undermine the Act itself. In addition to the concomitant increase in federal expenditures, increased channel dredging will destroy more benthic animal and plant communities. The deepening and widening of navigation channels can also result in significant salinity changes which can adversely impact certain shellfish communities. In addition, channel enlargement also will likely lead to increases in the amount of boat traffic and the sizes of boat using the channel, resulting in greater disturbance of fish and wildlife species. For example, injuries and fatalities to the endangered West Indian manatee from boat collisions can be expected to increase if the Florida Intracoastal Waterway were enlarged. And, according to the U.S. Fish and Wildlife Service, 230 acres of habitat for the endangered whooping crane has already been lost to erosion at Aransas National Wildlife Refuge since the creation of the Gulf Intracoastal Waterway, largely due to waves from boat traffic.

Exemption of "essential" utility lines: In its final report, the Department recommended that federally-subsidized utility lines be allowed to run through CBRS units if no practicable alternative route exists. The Department further proposed that these lines be allowed to service development within CBRS units as long as the federal government incurs no extra cost. Once infrastructure has been established on a coastal barrier, it is much harder to discourage subsequent development of the barrier. An exemption for utilities, therefore, would fly in the face of the Act and undermine CBRA's effectiveness in discouraging unwise coastal barrier development. **As a result, we strongly oppose the Department's proposal to exempt utility lines and urge Congress not to include it in CBRA legislation.**

Failure to Prohibit Federally-funded Activities Affecting System Units: In 1987 the Interior Department considered a proposal to deny federal funding for projects occurring outside the System but which directly affected a unit within the System. Unfortunately this proposal was not included in the Interior Department's final

recommendations. Interior opted to allow federal agencies the discretion to consider such projects on a case-by-case basis although the Department acknowledged in its final report several instances where agencies have chosen to fund activities which promoted development of a System unit.

Without a prohibition on such funding, the federal government will continue to undermine the intent of CBRA to prohibit federal assistance which encourages development of System units. A current example of this is the proposed granting of a free easement of military land to developers for the construction of the Mid-Bay bridge from the Eglin Air Force Base across the Choctawhatchee Bay to Moreno Point (unit P32) in Florida. Although this island is currently undeveloped, it has been platted for development and bridge access will certainly facilitate these efforts. In its Finding of No Significant Impact, the Eglin Air Force Base itself admitted that the project is expected to "encourage the development of a unit in the coastal barrier system."

We strongly support an amendment to the Act which would prohibit federally funded activities, such as construction of wastewater treatment plants or bridges, that are specifically directed to a purpose within a System unit which is incompatible with CBRA's goals, even if the activity occurs outside the unit.

Failure to Require Federal Regulatory Consistency: Although the Act prohibits most federal financial assistance for new construction within System units, it does not prevent the issuance of federal development permits. Several federal agencies, including the U.S. Army Corps of Engineers, Environmental Protection Agency and the U.S. Coast Guard, administer regulatory programs for activities on coastal barriers. Between October 1982 and April 1985, over 250 federal permits were issued for construction projects on or adjacent to coastal barriers within and outside of the System.

By providing federal permits for new development within the System, the federal government appears to be condoning System development at the same time that CBRA is attempting to discourage it through a ban on federal financial assistance.

Requiring federal regulatory consistency would remove this counterproductive contradiction and further CBRA's goals by providing an additional disincentive for environmentally damaging and hazard-prone coastal development. **We, therefore, recommend an amendment to the Act that would prohibit the issuance of any federal permits within the System which are inconsistent with purposes of the Act.**

Failure to restrict the disposal of dredged materials: The disposal of dredged materials in coastal barrier systems can severely impact valuable fish and wildlife habitat. Currently, however, dredged materials can be disposed of in System units without consideration for the purposes of the Act. In its 1987 draft report, the Interior Department recommended that this policy be changed, but it neglected to make the same proposal in its final report. **We urge the subcommittee to amend CBRA with Interior's 1987 proposal to require that the disposal of dredged materials within CBRS units be done in a manner consistent with the purposes of CBRA.**

Self-certification of CBRA Compliance by Federal Agencies: Federal agencies are required by Section 7 of the Act to certify their compliance with CBRA by submitting an annual letter to the Office of Management and Budget (OMB). OMB then provides this certification to Congress. Because OMB does not have the authority to audit federal agencies to verify these agency compliance assertions, however, this certification requirement amounts to little more than a paper-pushing exercise. Interior recommended that Section 7 be amended to require federal agencies to self-certify that their activities have been consistent with CBRA's provisions and submit notice of this certification to Congress.

Since CBRA's funding prohibition for new development in the System is the heart and soul of the Act, compliance by federal agencies is essential. Review of agency activities should be made by an objective party capable of auditing agency expenditures such as the General Accounting Office. **We, therefore, propose that the 1982 Act be amended to require federal agencies to certify their CBRA compliance with the General Accounting Office rather than**

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themselves.

Interior Department Recommendations That We Support

We do, however, strongly support the recommendations made by the Interior Department in its final report which would expand the System and the protection it offers. Specifically, we support the:

Inclusion of all associated aquatic habitats: Although "associated aquatic habitats" -- "adjacent wetlands, marshes, estuaries, inlets, and nearshore waters" -- were considered an essential component of a coastal barrier in the 1982 Act, these areas were generally not included within the System in 1982. This was because 1982 unit boundaries were based on maps of fastland acreages (land above mean high tide) for the denial of federal flood insurance under the 1981 Omnibus Budget Reconciliation Act (OBRA) which was preempted by CBRA.

We strongly support the addition of these associated aquatic habitats now. More than 90% of the acreage proposed for addition into the System by the bill are associated aquatic habitat, and roughly 50% of this is coastal wetlands. Since many of the fish and wildlife resources on coastal barriers which the Act seeks to protect are located in these areas, it is particularly essential to include these areas within the System. Addition of these areas to the System will also help implement the National Wetlands Policy Forum's and the Environmental Protection Agency's recommendation for "no net loss" of wetlands, a recommendation which has been endorsed by President Bush.

Broadening the definition of a "coastal barrier": Under the 1982 Act, a landform must be composed of "unconsolidated sedimentary material" in order to qualify as a coastal barrier for inclusion within the System. During the past seven years since the passage of CBRA, scientific understanding of coastal processes and landforms has greatly increased. One result is the realization that coastal landforms composed of consolidated materials such as carbonate-cemented or silt and clay deposits also perform the valuable function of buffering mainland communities and adjacent

wetlands from the damaging effects of storms. These areas are also often adversely impacted by overdevelopment.

Areas in the Florida Keys are especially threatened by intensive development. The Keys barriers protect valuable seagrass beds and mangroves that provide habitat for the over 500 species inhabiting the waters surrounding the Keys. Coastal development in this region, however, is polluting nearshore waters, threatening the health of the continental United States' only living coral reef system, and destroying habitat critical to many of the Keys numerous endangered species. Destruction of these resources would not only be an environmental tragedy but would also undermine the two largest industries in the Keys -- tourism and commercial fishing -- both of which rely on pristine natural resources.

Inclusion of the Florida Keys within the System will reduce hurricane evacuation problems and the extent of future hurricane disasters. By discouraging overdevelopment, System designation will also help ease the stress on infrastructure and public service capabilities which are currently being outpaced by unchecked population growth and construction. Problems with traffic congestion in the Keys have become so severe that the state has threatened to appeal permits for new construction in many areas of the Keys if the county cannot ensure that infrastructure capacities are capable of coping with existing population densities.

The coastal barriers of Puerto Rico and the U.S. Virgin Islands are similarly threatened by development. As coastal populations continue to skyrocket, the unique coastal resources of these two countries are being rapidly destroyed by urban runoff, sewage effluent, dredging, sand mining, and shoreline construction. Inclusion of Puerto Rico and Virgin Island areas within the System will help reduce this environmental degradation.

As a result, we strongly concur with the Interior Department's recommendation to remove the unconsolidated sediment requirement from the Act. This would allow for the System designation of such areas as granitic outcroppings in New England, carbonate-sediments in the Florida Keys and Puerto

Rico, fringing mangroves and their associated reef systems in the Virgin Islands and the Keys, and wooded cheniers in Louisiana.

Inclusion of secondary barriers: Secondary barriers are smaller shoreline barriers created within large bays by internally generated, wind-driven waves. Although these landforms were excluded from the System in 1982, they provide comparable storm protection for mainland communities and adjacent aquatic habitats and have the same composition as ocean-front barriers.

The estuaries associated with secondary barriers also support highly productive wetlands habitat. For example, the Chesapeake Bay provides resting and feeding grounds for more than 75% of the waterfowl that migrate along the Atlantic Coast and in 1983 produced half of the blue crabs harvested in the United States. At the same time, run-off from bayside development greatly exacerbates the water pollution problem plaguing many bays today, causing overfertilization of algae populations and the depletion of necessary oxygen levels in the water.

We, therefore, feel that the protection of secondary barriers within the System is highly appropriate and support the Department's proposal to add approximately 67,000 acres and 170 shoreline miles of secondary barriers within the Chesapeake, Narragansett, Delaware and other bays.

Automatic inclusion of excess federal lands: In its final report, the Interior Department recommended that all surplus federal coastal barrier lands be automatically included within the System prior to disposal if they meet the Act's criteria for System designation. Due to the intense development pressure in many coastal areas, excess federal lands could easily be sold for development counter to the goals of the Act, if federal development subsidies were to continue to remain available to the new property owners. Automatically including such lands within the System would help achieve consistency between the goals of CBRA and the federal government's land selling policies. **We, therefore, support Interior's recommendation to automatically add eligible surplus federal lands to the System before they are sold.** We do not, however, support this recommendation in lieu of

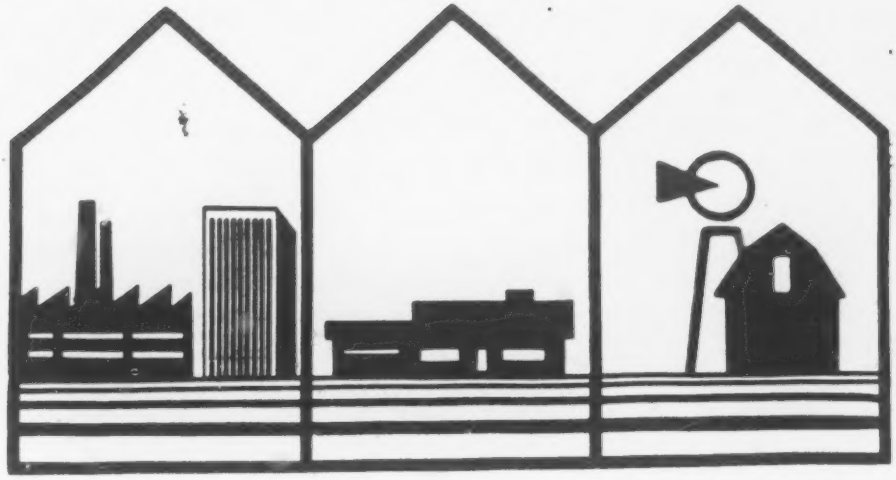
including military and Coast Guard lands and otherwise protected areas within the System.

Preparation of a Joint Study: A significant portion of the American coastline -- approximately one-third of the Atlantic and Gulf Coast -- has already been developed and is, therefore, not eligible for inclusion within the System. Both opponents and proponents of CBRA designation have remarked upon the inequity of removing federal subsidies on undeveloped coastal barriers while continuing to subsidize and resubsidize development on developed barriers when they are devastated by storms, flooding, or erosion.

In its final recommendations, the Interior Department proposed that an interagency study be conducted to examine various options to address the issue of federal subsidies on both undeveloped and developed coastal barriers. **Given the imminent conflict between sea level rise and coastal overdevelopment, we concur with this recommendation and propose that CBRA legislation include a provision to require that such a study be undertaken.** This study should include an examination of the magnitude and impact of tax policies, such as casualty loss deductions, which encourage coastal development.

Conclusion

It is rare when we have an opportunity to protect our environment and save precious federal tax dollars at the same time. Members of Congress and President Reagan recognized this same opportunity in 1982 when a Democratic House and a Republican Senate and Administration passed the original Coastal Barrier Resources Act. This unique legislation occurred in an atmosphere of bipartisan cooperation which joined environmentalists with public safety proponents and fiscal conservatives. It is our hope that this same Congressional and Administrative cooperation can be achieved again with the expansion and strengthening of this important program. We urge the members of the subcommittee to join Senator Chafee in drafting and supporting strong legislation to expand and strengthen the Coastal Barrier Resources Act. Let us not let Hurricane Hugo's lesson go unheeded. Our coasts depend on it and so do our wallets. Thank you for the opportunity to testify.



Statement of the

NATIONAL ASSOCIATION OF REALTORS®

REALTOR®

The Voice for Real Estate™

THE WORLD'S LARGEST TRADE ASSOCIATION

TO: COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
ON THE COASTAL BARRIER RESOURCES SYSTEM

SUBJECT: PROPOSED CHANGES TO THE COASTAL BARRIER RESOURCES SYSTEM

DATE: SEPTEMBER 29, 1989

HEARING BEFORE THE U.S. SENATE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

ON THE COASTAL BARRIER RESOURCES SYSTEM

SEPTEMBER 29, 1989

Thank you, Mr. Chairman, for the opportunity to submit our statement for the record before the Subcommittee on Environmental Protection. The NATIONAL ASSOCIATION OF REALTORS®, comprised of more than 800,000 members involved in all aspects of the real estate industry, has a keen interest in proposed changes to the Coastal Barrier Resources System (CBRS) and the Coastal Barrier Resources Act (CBRA) because of the dramatic effect such changes may have on the utility, marketability, and value of private property.

Our concerns extend beyond the immediate interests of the real estate industry and encompass the larger issue of protecting private property rights. The NATIONAL ASSOCIATION OF REALTORS® strongly believes in the fundamental right of all private property owners, working through local government, to determine the highest and best use of their land. Every person should have the right to acquire real property with the confidence and certainty that the value of their property will not be unduly diminished or jeopardized by governmental action at any level without the owner's expressed consent. The Federal government should minimize its involvement in land use decisions that selectively implement or withhold Federal programs. Planning for the classification and use of land must adequately consider the needs of housing and commercial growth as well as the quality of life and a healthy local economy. Therefore, the NATIONAL ASSOCIATION

OF REALTORS® opposes wide scale expansion of the Coastal Barrier Resources System.

As stated in the Department of the Interior's Final Report to Congress (1988) as required by Section 10 of the CBRA, the Atlantic Ocean and Gulf of Mexico coasts contain approximately 2,700 miles of shoreline on over 400 coastal barriers. As it exists today, the Coastal Barrier Resources System is comprised of approximately 450,000 acres of land along these shorelines. The recommendations contained in the Department of the Interior's Final Report to Congress would add approximately 790,000 acres of this shoreline to the CBRS.

ATLANTIC AND GULF COASTS

In its Final Report to Congress, the Department of the Interior appropriately limited the amount of acreage being recommended for inclusion in the Coastal Barrier Resources System to the Atlantic and Gulf coasts. In Section 2 of the Coastal Barrier Resources Act, Congress identified problems unique to coastal systems in the eastern and southeastern portions of the country. Congress determined, in passage of the CBRA, that loss of human life, wasteful expenditures of Federal revenues, and damage to fish and wildlife in certain coastal barrier areas necessitated prohibition of Federal expenditures in order to inhibit further development. We agree with the Department of the Interior's assessment in their Final Report to Congress that coastal barrier designations beyond the Atlantic and Gulf coasts are not consistent with the intent of Public Law 97-348. However, in its final recommendations for changes to the current

CBRS, the Department of the Interior failed to thoroughly review all impacts, both environmental and economic, which inclusion in the System will have on governmental as well as private interests. Therefore, we strongly urge Congress to undertake this review before expanding the current CBRS.

GREAT LAKES COAST

The NATIONAL ASSOCIATION OF REALTORS® is concerned that the time frame established for the remapping and restudying of the Great Lakes states was extremely limited. The Department of the Interior took several years to produce more accurate maps, to study the appropriate areas, to allow for adequate public input, and to make recommendations for changes to the existing Coastal Barrier Resources System. The Great Lakes recommendations that were recently transmitted to Congress did not allow sufficient time for the Department of the Interior to comprehensively review all the information including accurate economic and environmental analyses of those areas proposed for inclusion in the CBRS, nor was there an appropriate period for public comment. It is inappropriate, at best, to have allowed both the Secretary of the Interior and the public such short notice to act on the serious business of preventing certain private property owners from utilizing government programs available to everyone else.

It is evident that the final maps transmitted to Congress in June did not incorporate many, if any at all, of the public comments the Department of the Interior had received for the Great Lakes proposal. Our members provided comments to the Department of the Interior in a good faith effort to express concern with the Great Lakes maps. The comments provided on the maps were done

without the benefit of environmental and economic assessments of those proposals, and without the benefit of locally held hearings by the Department in an attempt to work out some of these concerns.

WEST COAST

The NATIONAL ASSOCIATION OF REALTORS® has great concern with granting authority to the Department of the Interior to "restudy" and "remap" the Pacific coast states for their possible inclusion in the Coastal Barrier Resources System. It must be remembered that the CBRS was developed and enacted to address problems unique to the eastern and southern coastal systems. Congress originally recognized that other coastal systems, such as those located on the Pacific shoreline, do not experience the same oceanographic and climatological forces as those systems on the Atlantic and Gulf coasts. These areas also do not experience the same development pressures and thus do not present the degree of hazard to human life, fish and wildlife that Congress believed existed on other coastal barrier systems. Thus, Congress appropriately limited coverage of the CBRS to the Atlantic and Gulf coasts.

ASSOCIATED AQUATIC HABITAT

The designation of associated aquatic habitat, as outlined by the Department of the Interior's recommendations should have been done on a more scientifically precise basis and in a manner that better reflects the multiple purposes of the Coastal Barrier Resources Act. While it may be appropriate to include adjacent upland portions of a coastal barrier in the Coastal Barrier

Resources System, these delineations seem to have been done without a precise methodology. Further documentation about those areas that are typically subject to wind, wave, and tidal energy from storms hitting the coastal barrier are needed. The report also lacks details regarding how the other goals of the CBRA, such as protecting human life and minimizing expenditure of Federal funds, are being met by recommending for inclusion such large portions of associated aquatic habitat.

NATIONAL FLOOD INSURANCE PROGRAM

A uniform policy for administering the National Flood Insurance Program should be adopted, eliminating the existing double standard which denies insurance coverage for certain flood prone areas, such as coastal barriers, and wetlands, yet retains coverage for the remainder of the United States subject to flooding. Legislative actions that alter the Federal flood insurance program must ensure legitimate property rights and reasonable development opportunities are not abridged.

In the Department of the Interior's Final Report to Congress, the statistics used for flood damage and flood insurance relate to coastal communities and not specifically to coastal barriers. These figures are misleading in that only a very small portion of these coastal communities, on the average, are coastal barriers. Indeed, if the Department of the Interior has such information for coastal barriers, its publication would be most useful.

Congress must recognize that this type of data as identified in the Department's report, is not a current description of the situation on coastal barriers, but of coastal communities.

It is important to note that applicants for Federal flood insurance under the National Flood Insurance Program (NFIP) for all new construction pay the full actuarial rates that reflect the risks, so the government is minimally at risk with all new properties coming under the NFIP. Under the NFIP, participating areas and individuals must utilize flood plain areas in a prudent manner and can incorporate flood proofing techniques into site planning and building renovation. The NFIP imposes stringent building construction safety standards on all new construction and substantial improvements in flood hazard areas where their insurance is available. This has resulted in much safer construction in the Nation's flood plain areas than would have taken place absent the requirements of that program. This safer construction has had the positive effect of reducing the potential for loss in such areas. It must be recognized that flood damage is the subject of the NFIP. Other storm related damage such as broken windows, damaged roofing material, and other property damage not directly relating to flooding is not covered by the NFIP, but rather is covered under an individual homeowner insurance policy.

If Federal flood insurance is not available in those areas proposed for inclusion in the Coastal Barrier Resources System, it is likely that any development that does occur without the benefit of Federal funds will also not have the benefit of safety margins as are assured by participation in the NFIP. Adherence to the NFIP regulations provides a substantial measure of protection

for property and life (a key component of the Coastal Barrier Resources Act). We remain concerned that denial of Federal flood insurance may result in the development of substandard and unsafe housing along the Nation's coasts truly increasing expenditures at all levels of government as well as jeopardizing human health and welfare.

Critics of the use of Federal flood insurance along the coasts have both overestimated the costs of the NFIP, and underestimated the real economic and other costs of arbitrarily closing off large areas to development. In the National Wildlife Federation and National Tax Payers Union April 17, 1989 report entitled, "Turning the Tide on Wasted Tax Dollars," (Miller and Stroup) it appears that several of the assumptions made are incorrect according to data provided by the Federal Emergency Management Agency with respect to the National Flood Insurance Program. The current NFIP "penetration of the market" is approximately fourteen percent, not ninety percent as assumed for the purposes of identifying deficits that exist (page 15). The $55 average deficit (page 14) does not seem to have been derived from current NFIP data which indicate an operating surplus for "V Zones" in Pre and Post FIRM construction, rather it appears to be the composite of all NFIP policies including inland areas. Taking the data issued by the NFIP in the document entitled, "National Flood Insurance Program Loss and Expense Experience Accident Period 1978-1988," (appendix A) it is quite evident that the figures identified in the NWF report for both high and low development cases are incorrect. As an example, the NWF assumes that each of the 19,400 acres in the low development case will have development at the rate of 5 structures (or 5 potential policies) per unit, for an approximate total of 100,000 potential policies. Using current NWF assumption of 19,400 additional

acres in the low development case, the actual approximate market penetration rate of fourteen percent, and the NFIP data for V Zone Post FIRM and V Zone Pre FIRM policies, it is easy to see that a surplus of approximately $2,445,100 would exist per year for Post FIRM V Zone policies with the surplus carried out over 20 years of approximately $48,902,000, and an approximate surplus of $ 614,600 per year for Pre FIRM V Zone policies with the surplus carried out over 20 years of approximately $6,146,000. We are not experts in being able to interpret such data, and would find it extremely useful if the Federal Emergency Management Agency would review this study as it relates to the NFIP.

In another paper, delivered at the Coastal Zone '89 Conference in Charleston, South Carolina on July 13, 1989, it appears that the NWF comes up with some very different conclusions than the April 17, 1989 report. The paper, entitled "Building in the Coastal Barrier Resources System" (Jones and Stolzenburg), attempts to assess the development that has occurred on CBRS units since 1982. Through an examination of aerial photographs for 157 units from 1986 to 1988, the NWF found that there was a 40.7% increase in the number of structures on these units, 52.5% of which occurred in Florida. The report also concluded that "more extensive research is needed to fully assess the impact of CBRA on coastal development." Although one of the purposes of the Act was to discourage development by denying the availability of Federal flood insurance and Federal financial assistance, the study found that the prohibition of Federal flood insurance did not preclude development.

CONCLUSION

In summation, changes to the Coastal Barrier Resources System are controversial and will have a significant impact on private property owners. In order to thoroughly review the successes and problems of the Coastal Barrier Resources System, Congress must provide the public with ample opportunity to express concern or agreement with those areas proposed for inclusion or deletion to the System including comprehensive field hearings in all those areas impacted. We urge Congress to consider all comments offered by affected private property owners, and realize the true impact of inclusion in the Coastal Barrier Resources System to those individuals.

We ask Congress, is it fair that property owners located in high risk inland flood plains are able to receive Federal funds for development while those property owners who reside along the coasts of the United States are denied this opportunity? And in this time of ever increasing housing costs, is it fair to cut off opportunities for home ownership to those individuals who wish to reside along the coasts of this country? Congress must fully examine the actual economic impacts inclusion in the Coastal Barrier Resources System has on our local communities, State and Federal governments and weigh these impacts against marginal environmental benefits and the ability denial of Federal funds has to protect human lives. We recognize that inclusion in the System does not prevent development, however, we maintain that the effects of denial of Federal funds may indeed place a greater likelihood for the adverse impact on the Federal budget and the greater potential for hazard to human life, fish and wildlife.

human life, fish and wildlife.

And finally, we agree with Elise Jones and William Stolzenburg of the National Wildlife Federation that there indeed is a need for further research of the impacts of the Coastal Barrier Resources Act before Congress can consider changes to the Coastal Barrier Resources System.

We look forward to working closely with you on this issue of vital importance.

Ira Gribin,

President

APPENDIX A

EXHIBIT B3
JUNE 1989

NATIONAL FLOOD INSURANCE PROGRAM
LOSS AND EXPENSE EXPERIENCE
ACCIDENT PERIOD 1978 - 1988

	Zones VE,V1-V30 Post FIRM	Zones VE,V1-V30 Pre FIRM	Unnumbered Zone A Post FIRM	Unnumbered Zone A Pre FIRM	Zones AE,A1-A30 Post FIRM	Zones AE,A1-A30 Pre FIRM	Zones B,C,X	Emergency Program	Program Totals
1) Earned Exposures (earned policy terms)	105,049	529,642	313,407	1,464,325	1,304,300	5,955,749	5,957,993	3,145,321	20,449,041
2) Average Earned Premium	$376.96	$242.71	$210.42	$190.93	$143.40	$173.67	$128.84	$109.72	$153.85
3) Number of Paid Losses	1,416	9,664	1,142	22,352	5,718	110,415	67,474	102,840	348,667
4) Average Loss Payment	$8,504.73	$8,376.78	$8,145.42	$8,172.16	$9,859.55	$7,961.92	$7,647.12	$5,552.85	$7,225.41
5) Loss Ratio	0.30	0.63	0.14	0.65	0.30	0.84	0.67	1.65	0.80
6) Loss Frequency per 100 Policies	1.3	1.8	0.4	1.5	0.4	1.9	1.1	3.3	1.7
7) Average Loss Cost per Policy	$114.64	$152.85	$29.68	$124.74	$43.22	$148.75	$86.60	$181.03	$123.20
8) Other Expenses (average per policy)									
a) Agent Comm./Allowance	$58.16	$37.45	$32.47	$29.46	$22.13	$26.80	$19.88	$16.93	$23.69
b) Loss Adjuster	$5.99	$6.94	$1.54	$5.56	$1.69	$6.44	$4.02	$10.32	$5.88
c) Servicing Facility/ WYO Operating Allowance	$23.51	$23.51	$23.51	$23.51	$23.51	$23.51	$23.51	$23.51	$23.51
9) Operating Surplus/ (Deficit) per Policy on Paid Basis*	$174.65	$21.96	$123.22	$7.66	$52.84	($28.83)	($5.17)	($122.07)	($22.73)

*The operating surplus is the policyholder contribution in periods of relatively better loss experience towards reserves used to fund high loss years.

APPENDIX B

EVALUATING THE COASTAL BARRIER SYSTEM EXPANSION PROPOSAL

SUMMARY OF THE ANALYSIS

- The Miller study ignores one-half of the calculation since it does not count the possible economic loss of the development of the fastland to be added to the CBRS.
- We can roughly estimate these impacts (1987 dollars) on the order of $18.6 billion to $31 billion which exceeds the $10 billion savings computed by Miller. Since home prices have been increasing at an average of 5 percent per year over the last two years, the 1989 dollar value ranges from $20 to $34 billion. Of course, Miller's estimates would probably increase as well.
- These impact figures do not even include the potential tax base increase and resulting federal, state, and local taxes that would be collected due to development.
- However, the impact estimates assume that withdrawal of the subsidies (expanding the CBRS) would result in no development of the area and that developers cannot develop anywhere else, in lieu of the CBRS areas. This assumption can be challenged but nevertheless still rings true in many places where desirable coastal areas are scarce and very costly to develop without Federal programs.
- Nevertheless, our basic economic argument strongly indicates the economic losses from not developing probably exceed the Federal subsidy costs, indicating expanding the CBRS is not a good idea.

OVERVIEW

A major shortcoming of the study "Turning the Tide on Wasted Tax Dollars" by H. Crane Miller is that it does not count the possible economic loss of non-development of the fastland proposed for inclusion in the CBRS. It is possible to roughly estimate the maximum loss from nondevelopment using several assumptions and the proposed parameters of the study.

If coastal barriers are added on all coasts, this would contribute 81,063 acres of fastland (dryland) and 439,258 acres of wetland. In the high development case, which provides the largest benefit from decreased subsidy, the savings totals $10.8 billion. We will focus on that case since it generates the largest benefit.

Using the high development case assumption of development or urbanization of 50 percent of fastlands, the full system would include 40,530 acres of dry land that could be developed/urbanized. We will not attempt to construct an estimate for wetlands development since specific housing unit assumptions are not given. Using their assumption of an average density of 5 dwelling units per dryland acre suggests some 200,000 new units potentially could be developed. In previous studies, (see Appendix) we have estimated the average contribution to the economy of a new home at about $155,000 in 1987 dollars, including multiplier effects which are spread-out over time. Thus, a rough estimate of the potential economic loss if no private development occurs in the absence of the federal programs for insurance, severs, roads, and bridges is $31 billion. This clearly exceeds the $10 billion in benefits to the Federal Treasury from not developing the areas.

Some Caveats Regarding the Estimates

We are implicitly assuming that the withdrawal of the Federal subsidies would cause no private development to occur. However, if only one-half of the urbanization occurs, there is still a $15 billion

benefit to development. Another assumption involves the possible substitution of non-CBRS lands for development which would not have occurred if the CBRS additions were not made. This analysis implies that developer supplies of land are totally fixed including to the CBRS lands. That is, they cannot develop anywhere else. This is a major problem with any spatial development analysis, that is, to assume that land parcels across space are not fungible. A sightly better assumption is that developers have detailed plans for all parcels, including the proposed CBRS additions which cannot be altered without significant cost to all development. Thus, the loss of the CBRS lands cannot be replaced by land somewhere else. This is probably true for certain kinds of recreational and resort properties. It also costs to re-allocate local land resources and to go through the development planning process. Thus, there will be some process costs to developers who had planned to develop these areas and find they cannot. Furthermore, the price of developable land in the immediate vicinity should rise, raising future land development costs, and ultimately the prices paid by consumers.

A small weakness in the $155,000 new housing construction cost estimate is that it includes multiplier effects of $44,000. These occur over time (perhaps up to two years) and are estimated based on the entire economy. However, the average construction cost estimate of $77,000 is an "injection" into a local economy that occurs within a year (97 percent of new starts are completed and sold within a year), thus, it has a definite impact in a relatively short period of time.

In terms of current costs, the median price of a new home increased from $96,500 in April 1987 to $117,000 in April 1989 or a 21 percent increase. Assuming costs rose proportionately, the $155,000 is more on the order of $187,500 in current dollars. Thus, even if we cut-off our multiplier effects, we still have a construction cost of about $93,000 leading to an effect of $18.6 billion, ignoring other impacts from successive rounds of spending by recipients of the factor payments.

Under the high development scenario the construction of a residence would have to generate average values (in present value terms) of $54,000 to just equal the savings to the Treasury from non-development efforts. It seems quite likely that most development including commercial and high density residential should be able to average $54,000 across all 200,000 parcels. To this extent, it is very likely that the contribution to the economy, especially local economies, from developing these land would exceed the Treasury savings.

A more stringent test of whether development is more beneficial than non-development is if the taxes generated over time from development would offset the future value of the subsidies. In other words, could the additional benefit generate sufficient federal taxes to pay for the subsidies? This is too difficult to answer without a model, although, given enough time the development should. Furthermore, in analyzing the case, we have ignored any development of wetlands. To the extent, these areas could be developed (approximately 220,000 acres) for residential or business purposes, there should be substantial benefits.

DISCUSSION OF THE PROPOSAL SPECIFICS

The Coastal Barrier Resources Act of 1982 prohibited all new federal expenditures and financial assistance within the Coastal Barrier Resources System (CBRS), with certain exceptions. Any new developments within the barrier would not have benefit of federal subsidies for roads, bridges, causeways, wastewater management, water supply, treatment and distribution, disaster relief, flood insurance, shore protection, and similar measures. The CBRS includes the Atlantic and the Gulf of Mexico coasts. A proposal is before Congress to expand the existing CBRS on the Atlantic and Gulf of Mexico Coasts, and include the Great Lakes and the Pacific Coasts in Washington, Oregon and California.

Summary of the Study

The author of the report being reviewed here argues that the 1982 act takes a *laissez faire* stance in that it does not restrict development but rather removes government subsidies for these areas. However, all land outside the CBRS are eligible for government subsidies. Thus, the federal government must feel that the differential treatment of the CBRS is warranted due perhaps to the increased incidence in this area of natural hazards and environmental destruction. Whether this extension of this differential is warranted has not been determined. This study only estimates part of the components necessary to evaluate the proposal.

The report produced for the National Wildlife Federation by H. Crane Miller estimates the cost savings that could be realized by the federal government if the coastal barrier resources system were expanded to include eligible areas identified by the U.S. Department of Interior. The report estimates a cost savings to the federal government of between $1 billion and $9.3 billion if the system were extended to include the additional acreage recommended by the U.S. Department of the interior on the Atlantic and Gulf of Mexico coasts. Further expansion to include coastal barriers of the Great Lakes and the Pacific Coastal barriers is estimated to increase savings to between $1.9 billion and $10.8 billion.

METHODOLOGY OF THE STUDY

The amount of acreage to be added to the coastal barrier system is based on the Department of Interior's recommendation.

The estimates are based on a number of assumptions and are derived for two scenarios. The low development case assumes 50 percent development of the fastland acreage in each unit. The high development case assumes 50 percent development of the total fastland and estimated additional wetlands.

The assumptions include:

- Average density on the developed acreage would be 5 dwelling units per acre;
- Average occupancy would be 4.3 persons per dwelling unit;
- 80 gallons per capita per day water use;
- 80 gallons per capita per day sewage flow;
- only island units with greater than 100 acres of fastlands and with no current bridge or causeway access are considered potential candidates for bridges or causeways.

Estimated costs are based on cost information provided by government agencies.

Comments on Evaluating the Proposal

A full evaluation of a government proposal should:

(1) Estimate the present value of the total private and social costs.

(2) Estimate the present value of the total private and social benefits of the proposal.

(3) Determine whether the net present value of the benefits minus the costs are positive or negative.

(4) If the net present value is negative, then the proposal should not be considered.[1]

(5) If the net present value is positive, then proposal should be considered.

The study by Miller cannot be used to fully evaluate the merits of the proposal because it estimates only a part of the benefits of the proposal (i.e., the cost savings to federal government), and does not estimate the cost of the proposal at all (i.e, lost economic activity, etc.)

Total Benefits of the Proposal

The author indicates that the study only estimates part of the direct cost savings to the government. For example, estimates for sewers, wastewater treatment facilities, etc. represent only construction costs and do not include planning, engineering, rehabilitation, repair and other costs in which the federal government might share. Moreover, the cost savings do not include consideration of the number of lives which might be saved and benefits to the environment. To the extent that the study's estimate is correct, it understates the total benefits of expanding the CBRS.

Total Costs of the Proposal

The study does not address the present value of the costs of the proposal. These costs are associated with losses in income and tax revenue due to the foregone development in the proposed additions to the CBRS. The enactment of the proposal would eliminate any additional employment which would have occurred due to the construction involved in development of the area, additional employment due to ongoing commercial activity generated by the development, and any multiplier effects associated with the development which would have occurred.

A report by the NATIONAL ASSOCIATION of REALTORS®, Real Estate in the U.S. Economy, estimated the output multiplier for the real estate industry to be 3.74. This means that a change in the final demand for real estate by each $1 would generate $3.74 worth of additional final output. This is because an increase in the demand for real estate would generate increases in the output of many intermediate goods and services that are required to produce the additional quantity demanded. Moreover, increases in employment would lead to additional income spent on other goods and services localities, and any net increase in tax revenue due to increased economic activity. The proposal would limit demand for real estate which would occur if the barrier is not extended, but we cannot say that the full multiplier effect due to the proposal is 3.74. This is because the money that would have been spent on purchasing properties in the proposed area would be diverted elsewhere, producing these other multiplier effects.

The revenue loss to the government due to limited development resulting from the proposal should also be considered. The development would expand the property tax base, and lead to additional federal, state and local income and sales tax collections.

Other costs to be considered involve the windfall losses to ongoing or future projects. If land was purchased and is in the process of being developed, or is to be developed in the future, then enactment of the proposal would lead to windfall losses to the current owners of the land. Thus, unless specific provisions are included in the proposal to protect these types of land/property owners, they would be unfairly harmed if the proposal were to become law.

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[1]However, the proposal to take away government subsidies to additions to the CBRS may still be considered if the money could be better used in other government programs, or if the money would be better off in taxpayers' hands (i.e., tax them less).

Net Present Value

Whether the benefits of the proposal would exceed the costs cannot be evaluated here, but it is suspected that the answer will differ for different areas under the proposal. In some areas, the probability of natural hazards and the potential environmental destruction might be so great as to encourage non-development of the area. However, in other areas, the risks associated with these events, and the subsidy from the government may be minimal in comparison with the benefits of additional economic activity that might arise from development.

Conclusion

The study by Crane Miller for the National Wildlife Federation is not sufficient to evaluate the proposal. A full evaluation would weigh the total benefits of the proposal against the total costs. Miller's study only accomplishes a small part of this exercise. Much more analysis is required to come to a valid conclusion.

APPENDIX

Contribution of Home Sales to GNP

Each housing transaction generates significant expenditures before, at the time of, and after the sale. The NATIONAL ASSOCIATION OF REALTORS® estimates that each existing single-family home sold in 1987 contributed nearly $21,000, and each single-family new home sold contributed nearly $127,000 to GNP. The result: in 1987 single-family home sales activity directly and indirectly generated economic activity totalling $222 billion, approximately 5 percent of GNP.

A detailed look at these estimates shows the widespread impact the decision to purchase a home has on the economy. (See Table 1.) Before a sale, owners typically spend a little more than $1,000 on repairs and maintenance in efforts to show their homes in the best possible light. In some cases, home sellers will directly employ professionals to do this work with subsequent employment and output effects. In other cases sellers will purchase supplies from local businesses and do the work themselves. For new homes, the obvious expenditure before the sale is the cost of constructing the housing unit. This average was $77,409 in 1987. Land costs and builder profits push the average new home price to the consumer well over $125,000.

For the most part, direct expenditures at the time of sale focus on the services applied to the sale. They typically includes fees paid to real estate agents, movers, attorneys, appraisers, termite and, structural inspectors, surveyors, property insurance companies, title insurance companies and even local governments. On average, these expenditures totaled $10,000 for each resale transaction in 1987 and $6,725 for each new home sale.

Finally, in the months following a home sale transaction, recent movers make expenditures to personalize their home. Government statistics indicate that recent movers typically outspend homeowning households that did not move. For 1987, the NATIONAL ASSOCIATION OF REALTORS® estimates this difference to have been $2,108 for resale homes and $2,411 for new homes in the 12 months immediately following a home purchase. These after-sale expenditures range from major capital improvements to the purchase of numerous smaller items. Analysis of consumer expenditure survey data collected by the Bureau of Labor Statistics suggests that recent buyers outspend nonmover homeowners on the following goods and services:

- Nonrecreational household furnishings (furniture; lines; minor and major appliances; etc.)
- Capital improvements (building or modernization of rooms, garages, or wings; construction of patios, driveways, or walkways; heating or air conditioning improvements, etc.)
- Miscellaneous consumption (telephone service; service and maintenance contracts, etc.)
- Recreational household furnishings (stereos, television, radios, etc.)
- Clothing

- Insurance and pensions.

While some of these expenditures are explained by differences in income, home sales (both new and existing) do generate substantial expenditures.

Home sales expenditures also feed subsequent rounds of spending. In 1987, these additional rounds of expenditures were conservatively estimated to total $6,900 per existing home, and about $44,350 for each new home sold, roughly half of the immediate impact.

Table 1
CONTRIBUTION OF SINGLE-FAMILY RESALES AND CONSTRUCTION TO GNP

	1987	
	Resales	New
Average Home Sales price	$105,400	$126,900
Construction	--------	77,409
Expenditures before resale	1,054	---------
Expenditures at time of sale	10,013	6,725
Expenditures after sale	2,108	2,411
Lenders' income net of cost of funds	632	1,776
Mortgage insurers' income	11	51
Subtotal	13,818	88,703
Multiplier effects	6,909	44,351
Total	$20,727	$133,054
1986 Home Sales Volume (units)	3.2 million	1.119 million
Total GNP Contribution	$72.9 billion	$148.9 billion
Contribution as a % of GNP	1.6%	3.3%

Source: NATIONAL ASSOCIATION OF REALTORS®
Homeownership Key to the American Dream
March 1988

REPORT TO CONGRESS:
COASTAL BARRIER RESOURCES SYSTEM

EXECUTIVE SUMMARY

Mapped, edited, and published by the Coastal Barriers Study Group

United States Department of the Interior

1988

Assistant Secretary for
Fish and Wildlife and Parks

25-078 O - 90 - 5

INTRODUCTION

The Coastal Barrier Resources Act (CBRA) of 1982 (Public Law 97-348) established the Coastal Barrier Resources System (CBRS), a system of undeveloped coastal barriers along the Atlantic and Gulf of Mexico coasts. Section 10 of the CBRA (16 U.S.C. 3509) requires the Department of the Interior, in consultation with the States in which CBRS units are located, to prepare and submit a report to Congress which contains:

(1) recommendations for the conservation of fish, wildlife, and other natural resources of the CBRS;

(2) recommendations for additions to, or deletions from, the CBRS, and for modifications to the boundaries of CBRS units;

(3) a summary of the comments received from the Governors of the States, State coastal zone management agencies, other government officials, and the public regarding the CBRS; and

(4) an analysis of the effects, if any, that general revenue sharing grants made under Section 102 of the State and Local Fiscal Assistance Amendments of 1972 have had on undeveloped coastal barriers.

This Report to Congress has been prepared as a 22-volume compendium with 4 appendixes. It was compiled under the direction of the Assistant Secretary for Fish and Wildlife and Parks by the Coastal Barriers Study Group, a task force of professionals representing the National Park Service, U.S. Fish and Wildlife Service, U.S. Geological Survey, and other Departmental offices. Volume 1 of the report describes the CBRS and discusses and presents recommendations on conservation and management alternatives for the CBRS. It also includes a description of the coastal barrier definition and delineation criteria used in DOI's study and recommendations and an analysis of the impacts of general revenue sharing funds in the CBRS. Volume 1 is a revised version of the document released in March 1985 ("Coastal Barrier Resources System Draft Report to Congress"). Volumes 2-22 of the report contain background information about each State's or Territory's coastal barriers and coastal programs, maps of undeveloped coastal barriers, and recommendations for specific additions to, deletions from, or modifications of the boundaries of the CBRS in those States or Territories. Appendix A is a report on shoreline change and wetland loss in the CBRS and Appendixes B, C, and D are reports containing preliminary and general information about the coastal barriers of the Great Lakes, Hawaii and American Samoa, and the Pacific Coast, respectively. This Executive Summary outlines the major findings in the entire report and presents the Department of the Interior's general recommendations for changes in the CBRS and conservation of its natural resources.

DESCRIPTION OF COASTAL BARRIERS

The coastal barriers of the Atlantic Ocean and Gulf of Mexico coasts make up one of the longest and best defined chains of coastal barriers in the world.

From Maine to south Texas, coastal barriers stretch like protective ribbons along 2,700 miles of our Nation's shoreline. These barriers absorb ocean energies, buffering associated wetlands and the mainland from daily waves and tides and occasional hurricanes and northeasters.

Coastal barrier habitats and their associated wetlands support a tremendous variety of organisms. Millions of fish, shellfish, birds, mammals, and other wildlife depend on barriers and their wetlands for vital feeding, spawning, nesting, nursery, and resting habitat. Often the highest diversity of wildlife on coastal barriers is found at the edge between marshland and upland or land and water.

People, too, seem to prefer this land-water interface. Many of the major resorts on the Atlantic coast--such as Atlantic City, Virginia Beach, and Miami--are located on coastal barriers. The coastal region, in fact, is the focus of many competing demands, including National defense, commerce, energy development, real estate development, recreation, and conservation. Pressures for certain uses of coastal habitats can lead to significant deterioration of coastal barrier resources. Construction and development, alteration of primary dunes, beach stabilization measures, maintenance of navigation channels, and groundwater extraction and contamination are all examples of human activities that can disrupt natural coastal processes and the ecological functions of coastal barriers.

Undeveloped sandy coastal barriers exist in a state of dynamic equilibrium as they constantly respond to the varying assaults of wind and water. Sand is shared between offshore sand bars, the barrier beach, the dunes, and, over the longer term, the entire land mass of the barrier. As sand is eroded from one part of the barrier, it is deposited somewhere else. During storms, the barrier retreats from the direct attack of the ocean through the overwash process. Large storm waves push through the dunes and sometimes across entire islands, depositing fans of sediment behind the dunes or in the soundside marshes. The overwash process also permits barriers to survive the worldwide rise in sea level by somersaulting backwards up the coastal plain.

Clearly, such a dynamic environment is a difficult place for people to live. Structures built too close to the shoreline are quickly threatened by an eroding beach. Hurricanes and northeasters can threaten property virtually anywhere on a barrier. Traditional beach stabilization structures such as groins, jetties, seawalls, and bulkheads interfere with the natural sand-sharing process; in the longer run, they may degrade or destroy the beach and even the barrier itself. Without associated coastal barriers, large population centers on the mainland would be threatened by the direct assaults of the sea.

Increased affluence and Federal subsidies are among the primary causes for the extensive development of our beaches in the past four decades. Populations in Coastal States are growing rapidly, at a rate well over three to four times the National average. Today one out of every two Americans in the continental United States lives within an hour's drive of the coast. As development and investments increase, the need to protect those investments also intensifies.

Protection of coastal development is not only complex, but costly as well. There are now over seven million people exposed to potential hurricane storm surges and flooding along the Atlantic and gulf coasts (Kusler 1983). Average annual property losses due to hurricanes rose from $250 million during the decade between 1951 and 1960, to over $400 million in the decade between 1961 and 1970. Hurricane Alicia in 1983 caused over $750 million in damages to commercial, residential, and public facilities in the Galveston, Texas, area (Platt 1985). Hurricanes Danny, Elena, Gloria, Juan, and Kate cost an estimated $1 billion in Federal payouts over the Atlantic and gulf coasts in 1985 (Federal Emergency Management Agency; pers. comm.).

From 1981 to 1985, about 23% (16 of 67) of the presidentially declared disasters involved coastal flooding and about 49% ($265 of $539 million) of the Federal disaster aid obligations were attributable to coastal damage (Platt 1985). The National Flood Insurance Program (NFIP) is one of the largest single financial obligations the U.S. carries. The NFIP insures over 2 million eligible properties with coverage in force of about $150 billion (Federal Emergency Management Agency, pers. comm.). Of this total, about 70% are in coastal communities (Platt 1985). The NFIP regards as coastal communities cities, towns, and counties having a portion of their areas on the coast. It is estimated that the costs to the Federal Government of extending its current development programs to the remaining undeveloped coastal barriers would be more than five times greater than the costs of public acquisition (Miller 1981).

Cost considerations such as these, along with environmental and safety concerns, led to the enactment of the Coastal Barrier Resources Act (CBRA) in 1982. This legislation was specifically designed to restrict federally subsidized development of undeveloped coastal barriers along the Atlantic and gulf coasts in order to:

(1) minimize the loss of human life,
(2) reduce the wasteful expenditure of Federal revenues, and
(3) reduce damage to fish and wildlife habitat and other valuable natural resources of coastal barriers.

The CBRA prohibits, within the undeveloped, unprotected coastal barriers of the Coastal Barrier Resources System (CBRS), most expenditures of Federal funds which encourage development. The intent of the CBRA is to remove from undeveloped coastal barriers Federal incentives for new development, such as National Flood Insurance, structural stabilization projects, and Federal assistance for construction of sewer systems, water supply systems, airports, highways, and bridges.

BACKGROUND ON THE CBRA

The Coastal Barrier Resources Act was the culmination of several years of study by Congress and the Department of the Interior (DOI) of Federal programs and how they affect the development of coastal barriers. Studies initiated by the DOI in 1977 assessed options for modifying about 40 Federal programs affecting

coastal barriers, including the National Flood Insurance Program. The results of these studies were released in a draft Environmental Impact Statement (EIS) in January 1980. Congressional action followed to redirect partially the economic risk of development back to the private sector.

Section 341 of the Omnibus Budget Reconciliation Act of 1981 (OBRA) amended the National Flood Insurance Act of 1968 to prohibit the issuance of new Federal flood insurance coverage after October 1, 1983, for any new construction or substantial improvements of structures located on undeveloped coastal barriers. The OBRA gave the Secretary of the Interior a twofold responsibility: (1) to designate coastal barriers based on a definition provided in the OBRA, and (2) to report to Congress with recommendations (if any) relating to the term "coastal barrier."

In accordance with the OBRA, the Secretary submitted a report to Congress on August 13, 1982. The definitions and delineation criteria and a listing of 188 units proposed for designation as undeveloped coastal barriers were published in the August 16, 1982, Federal Register (47(158):35696-35715). The Secretary's report to the Congress endorsed the general definitions and delineation criteria contained in the OBRA, and recommended that implementation of the OBRA proceed. The action recommended in this August 1982 report to Congress was identical to the Proposed Action of the 1980 EIS.

After the Secretary delivered his 1982 report to Congress but before final OBRA implementation, the Congress enacted the CBRA which established the 186 units in the CBRS and prohibited all new Federal expenditures and financial assistance within the CBRS, with certain specific exceptions. Section 10 of the CBRA requires this report and is discussed in the following portion of this introduction. Section 11 of the CBRA repealed Section 341 of the OBRA, eliminating the requirement that the DOI make final designations of undeveloped coastal barrier units where only Federal flood insurance would be prohibited.

A Final Environmental Statement (FES) on undeveloped coastal barriers was issued in May 1983, seven months after the CBRA was enacted. It assessed the environmental consequences of four alternatives considered in the planning process between January 1980 and October 1982. A large part of the High Level Protection Alternative (the Proposed Action) was incorporated into the CBRA. The definitions used in the CBRA are consistent with the definitions used in the OBRA and the delineations of undeveloped coastal barriers in the existing CBRS are generally consistent with those proposed by the Secretary of the Interior in his August 1982 OBRA report to the Congress.

While the CBRA reflects the Proposed Action in the FES in terms of geographic coverage, it expands the Federal prohibition from just Federal flood insurance to include all Federal programs that expend funds or provide financial assistance in support of development, unless specifically exempted or permitted by the CBRA. The High Level Protection Alternative was written pursuant to enactment of the CBRA and in cognizance of the Section 10 requirement to prepare this report. Subsequently, the DOI prepared a supplemental Legislative Environmental Impact Statement (LEIS) to assess the specific environmental and economic impacts of the DOI's recommendations to Congress.

The draft supplemental LEIS was released for public comment on February 1, 1988 (Federal Register 53(23):2792). Comments were accepted through March 17, 1988. The LEIS considered two alternatives: the Proposed Action (essentially the recommendations contained in this report), and No Action. Under the Proposed Action, more than 790,000 acres, of which about 39,000 acres is fastland, would be added to the CBRS along the Atlantic and Gulf of Mexico coasts. Under the No Action alternative, no changes would be made in the existing CBRS.

CBRA SECTION 10 REPORT

On December 5, 1983, the DOI published an outline of the studies it was undertaking to prepare the Section 10 Report in the Federal Register (48(234): 54543-54545). The DOI accepted public comments on this study plan through February 1, 1984.

In the Spring of 1985, the DOI issued a draft inventory of undeveloped coastal barriers on all U.S. coastlines and a draft text report on conservation alternatives for the CBRS. These documents were made available for public review as part of the information-gathering process; they did not include recommendations but rather provided a range of alternatives that could be used as the basis for recommendations to Congress.

On September 30, 1985, the DOI closed the public comment period on the report and inventory. The DOI received over 2,300 comments on the documents. A wide variety of viewpoints were expressed on the possibility of expanding the CBRS to include other coastlines, protected barriers, secondary barriers, and expanded aquatic habitat. A variety of opinions were also expressed on the conservation alternatives.

In addition to soliciting written public comments through the Federal Register, Departmental representatives met with State and local officials, and attended 26 public meetings or workshops. Various options for expansion were evaluated to increase the DOI's understanding of coastal barriers and their locations and status around the Nation. After reviewing the public comments received and the information gathered, the DOI formulated proposed recommendations to Congress.

In March 1987, the DOI issued a second draft report containing proposed recommendations to Congress. Public comments on the draft report and proposed recommendations were solicited and accepted for a 90-day period, closing June 23, 1987. More than 6,150 individuals commented. Opinions were expressed on every proposed recommendation in the draft executive summary and on many of the proposed recommendations concerning modifications of existing CBRS units and proposed new units. Comments on individual existing or proposed CBRS units are summarized in the appropriate State volume (Volumes 2-22). A summary of the comments on the general issues presented in this executive summary appears in Table 1. The official State or Territory positions on each of the general issues appear in Table 2. Each issue is discussed in greater detail in the following sections and in Volume 1.

RECOMMENDATIONS FOR ADDITIONS TO OR DELETIONS FROM THE CBRS

As discussed previously, the coastal barriers included in the CBRS in 1982 were delineated based on definitions and delineation criteria developed by the DOI for the OBRA. As the scientific understanding of coastal barriers has grown and the functional requirements of a good definition have become more obvious, however, the definitions and delineation criteria used by the DOI to inventory barriers have also evolved. The definitions and criteria used to delineate the proposed changes to the CBRS are presented in Volume 1 (Chapter 5) of the report. The major changes in these definitions and delineation criteria primarily affect the undeveloped and unprotected coastal barriers in the Florida Keys, Puerto Rico and the Virgin Islands, associated aquatic habitat, secondary barriers, "otherwise protected" barriers, and military and Coast Guard lands. Each is discussed further below.

DEFINITION OF COASTAL BARRIERS

Section 3(1)(A) of the CBRA defines a coastal barrier as a depositional feature (such as a bay barrier, tombolo, barrier spit, or barrier island) that--(i) consists of unconsolidated sedimentary materials, (ii) is subject to wave, tidal, and wind energies, and (iii) protects landward aquatic habitats from direct wave attack.

Although coastal barriers generally consist entirely of unconsolidated sediments composed of sand or gravel, sediments can sometimes include silt and clay, cobbles, or larger rocks or be consolidated. The DOI has identified areas that contain carbonate-cemented deposits (such as the Florida Keys), that consist primarily of silt and clay (such as fringing mangroves and cheniers), and that contain discontinuous outcrops of bedrock or coarse glacial deposits that nevertheless function as coastal barriers. A complete discussion of these areas appears in Volume 1. To allow the definition of coastal barriers to be expanded to include these areas, an amendment to the CBRA to delete the reference to unconsolidated materials is necessary.

Recommendation: The DOI recommends that the definition of coastal barriers in Section 3(1)(A) of the CBRA be amended by deleting subparagraph (i). The DOI also recommends that all undeveloped unprotected coastal barrier areas meeting DOI definitions be added to the CBRS and that any coastal barrier areas not meeting DOI definitions that were erroneously included in the CBRS in 1982 be deleted from the CBRS. As mentioned earlier, individual recommendations for additions to or deletions from the CBRS in each State or Territory are contained in the 21 State and Territory atlases (Volumes 2-22 of the report). A summary of these recommendations appears in Table 3.

GEOGRAPHIC SCOPE

When the CBRA was enacted in 1982, Congress only included coastal barriers on the Atlantic Ocean and Gulf of Mexico coastlines in the CBRS. The legislative history does not clearly indicate whether Congress intended to expand the CBRS

eventually to include other coastlines. During 1983-85, however, the Coastal Barriers Study Group gathered preliminary information about undeveloped coastal barriers on all U.S. coastlines. Although this endeavor resulted in draft maps and a large amount of data, additional studies and consideration are necessary before the DOI can make specific recommendations about the undeveloped coastal barriers along the Pacific Coast, Great Lakes, Alaska, Hawaii, and American Samoa. Because Congressional intent is unclear and there is so much controversy surrounding expansion to other coastlines (see Volume 1 for further discussion), the DOI does not plan to complete the studies of other coastlines unless Congress enacts legislation directing it to do so.

Undeveloped and unprotected coastal barriers in the Florida Keys, Puerto Rico and the Virgin Islands were not included in the CBRS in 1982. These barriers border the Atlantic Ocean and are subject to the same dynamic forces and development pressures as other Atlantic coastal barriers. These coastal barriers fully qualify for addition to the CBRS under DOI's expanded definitions (see previous recommendation).

Recommendation: The DOI recommends that the undeveloped, unprotected coastal barriers of the Florida Keys, Puerto Rico, and the Virgin Islands be added to the CBRS. The DOI also recommends that the additions to the CBRS in the Florida Keys do not include Highway 1 because it is the only means of entry to and exit from the islands and should be exempted for safety reasons.

ASSOCIATED AQUATIC HABITATS

The CBRA defines an "undeveloped coastal barrier" to include all associated aquatic habitats: "adjacent wetlands, marshes, estuaries, inlets, and nearshore waters." This definition reflects the specific conservation purposes of the CBRA to protect the fish, wildlife, and other natural resources of coastal barriers. All such associated aquatic habitats are inseparable parts of the coastal barrier ecosystem. The original units of the CBRS, however, include only minimum aquatic habitat because the 1982 Congressional designations were based on Departmental delineations for a prohibition on just the sale of Federal flood insurance as required by the OBRA. Those delineations focused on the undeveloped fastland portion of the barriers where residential development might occur.

Coastal barriers protect the aquatic habitats between the barrier and the mainland. These habitats are critically important to many fish and wildlife, including most of the Nation's commercial fish and shellfish harvest. The barrier and its associated habitats are one ecological system and the health and productivity of the entire ecosystem depends on the rational use of all the component parts.

"Associated aquatic habitat" includes all wetlands (e.g., tidal flats, swamps, mangroves, and marshes), lagoons, estuaries, coves between the barrier and the mainland, inlets, the nearshore waters seaward of the coastal barrier including the sand-sharing system and, in some tropical areas, the coral reefs associated with nearshore mangroves. Under normal weather conditions, only aquatic habitats immediately adjacent to coastal barriers are exposed to direct wave

attack. Major coastal storms, however, routinely affect the entire landward aquatic habitat. Such habitat survives major storms because coastal barriers receive the brunt of the ocean's energies. Storm waves break on the barrier beach, leaving a diminished storm wave to travel into the wetland. At the same time, the wetland stores storm flood waters, easing the flood pressure on the mainland. For this report, the associated aquatic habitat is considered to comprise the entire area subject to diminished wind, wave, and tidal energy during a major storm because of the presence of the coastal barrier. It is delineated to include up to a 1-mile expanse of open water or a 5-mile expanse of marsh behind a barrier, including those Coastal Plain remnants seaward of the continuous Pleistocene landmass.

Recommendation: The DOI recommends that all [illegible] habitats associated with the existing CBRS units and those included in [illegible] recommended new units be added to the CBRS.

NAVIGATION CHANNELS

In the 1987 Draft Report, the recommended additions of associated aquatic habitat included several Federal navigation channels maintained by the U.S. Army Corps of Engineers. Many commenters, including some State and local governments, expressed concern about the impacts of this on plans to deepen channels to accommodate larger vessels.

Recommendation: The DOI has adjusted the recommended boundaries of several individual units to exclude major shipping channels, such as the Brownsville Ship Channel. Furthermore, DOI recommends specifically excluding all existing Federal navigation channels, including the Intracoastal Waterway, by reference to allow widening and deepening, or study thereof, of such channels.

The environmental effects of channel improvements are assessed through appropriate Federal and State regulatory programs; these programs generally also serve the purposes of the CBRA.

SECONDARY BARRIERS

Secondary barriers are located in large, well-defined bays (e.g., Narragansett Bay, Chesapeake Bay) or in lagoons on the mainland side of coastal barrier systems if a suitable sediment source and sufficient wind, wave, and tidal energies exist. They are maintained primarily by waves generated internally by wind rather than open ocean waves. Consequently, they are generally smaller and more ephemeral than barriers along the coast of the Atlantic Ocean or Gulf of Mexico. Nonetheless, these secondary barriers are formed of unconsolidated sediments just like most oceanic coastal barriers, and more importantly, they also protect critical fish and wildlife habitat and provide substantial protection for the mainland during major storms.

Recommendation: The DOI recommends that secondary barriers be added to the CBRS.

OTHERWISE PROTECTED COASTAL BARRIERS

Congress excluded from the CBRS undeveloped coastal barriers that are "included within the boundaries of an area established under Federal, State, or local law, or held by a qualified organization as defined in Section 170(h)(3) of the Internal Revenue Code of 1954, primarily for wildlife refuge, sanctuary, recreational, or natural resource conservation purposes" (hereinafter referred to as "otherwise protected" areas). About one-third (34%) of the Atlantic and gulf coast falls into this otherwise protected category.

In his 1982 "Report to Congress on Undeveloped Coastal Barriers," the Secretary recommended that otherwise protected areas be included in the CBRS to ensure that private property owners within the boundaries of these areas not be granted Federal flood insurance. Most of the federally subsidized development that occurs in otherwise protected areas, however, is necessary to provide public access and accommodate visitors.

More than 95% of the beach-oriented recreational use of federally protected areas occurs on coastal barriers. All nine units of the National Park System on the Atlantic Ocean and Gulf of Mexico coasts that provide a significant amount of beach recreation, for example, are located on coastal barriers, with the exception of certain beaches on Cape Cod. These coastal barriers supported a total of 30 million visits in 1984, up from 22.5 million visits in 1979, and 8.9 million visits in 1977 (U.S. Department of the Interior 1983; Platt 1985). Much of this use is moderate- or low-intensity resource oriented recreational and educational activity. On National Wildlife Refuges, recent estimates show an average of 6 million visits annually to 20 of the 50 refuges located on the Atlantic and Gulf of Mexico coastlines.

State and local governments also protect coastal barriers. The large urban populations in the Northeast have created substantial demands for beach facilities. In New England, New York, and New Jersey, town beaches--often contiguous with the town and planned to provide beach recreation for residents during the summer--are common. In the southeastern and Gulf States, where urbanization is generally less intensive and more recent, beach use tends to be associated with private residential development. In Florida, where urbanization pressure is greatest, the State is making a considerable effort to develop local parks to satisfy the increasing public demand.

Although a few of the otherwise protected areas contain substantial amounts of "permanent" public recreational development, most are undeveloped, contain scattered public and private development of a temporary or minimal nature (such as boardwalks, dune crossings, picnic areas, campsites), or contain only a single developed area of bathhouses and other facilities to support beach-oriented recreation.

In addition, about a score of coastal barriers are effectively protected as wildlife sanctuaries and research areas by private conservation organizations such as the Audubon Society and The Nature Conservancy (TNC). The exclusion of these privately owned, otherwise protected areas from the CBRS increases their market value which can increase the incentive to the owners to subdivide and

sell the properties to acquire property elsewhere that may be more valuable to the conservation organization.

For example, on Dog Island, Florida, property owned in 1982 by TNC and excluded from the CBRS as otherwise protected has since been sold and can now be developed using the full range of Federal subsidies and with full access to Federal flood insurance. Other landowners on Dog Island, whose property is also undeveloped but is included in the CBRS, are unable to purchase new flood insurance or receive other Federal financial assistance.

Recommendation: The DOI recommends that all privately owned property that is within but is not a part of an otherwise protected area (i.e., inholdings) on an undeveloped coastal barrier be included in the CBRS. Where accurate maps of inholdings were available (e.g. for the National Seashores and Wildlife Refuges), the DOI has included the inholdings on the proposed CBRS maps (see appropriate State volumes). Where such information was lacking, the DOI recommends that the inholdings be included by reference.

The DOI also recommends that all otherwise protected areas in the existing CBRS be deleted. However, if any public or privately owned, otherwise protected area on an undeveloped coastal barrier is ever made available for development that is inconsistent with the CBRA purposes and the long-term conservation of the barrier, the DOI recommends that it then automatically be included in the CBRS. An amendment to the CBRA providing a legislative directive to DOI to develop guidelines for acceptable development and automatic inclusion of otherwise protected areas is necessary.

These guidelines could be similar to the Secretary's Standards for Historic Preservation used to certify Historic Preservation Tax Credits and should be developed with opportunity for public comment. Lack of adherence to the guidelines would constitute justification for automatic inclusion in the CBRS. Federal expenditures on otherwise protected coastal barriers should support recreation, education, and conservation activities that are consistent with the maintenance of the natural environment. The guidelines used to judge acceptable development could include, but not be limited to the following:

- the development is necessary to fulfill the purposes of the area;
- the development and its use can be accommodated on the barrier without significantly interrupting natural geological or ecological processes; and
- the development is located landward of the primary dunes and on the most stable portion of the barrier.

The otherwise protected areas on undeveloped coastal barriers are identified on the maps in Volumes 2-22 of this report.

MILITARY AND COAST GUARD LANDS

The Congress included three military installations and one Coast Guard station comprising 42 miles of beachfront and about 15,000 acres in the CBRS in 1982. During the 1985 inventory, an additional 29 undeveloped coastal barrier areas containing about 45 miles of beachfront and 30,000 acres of military and Coast

Guard lands in Maine, Maryland, Virginia, North Carolina, Georgia, Florida, and Puerto Rico were also identified.

Section 6 of the CBRA exempts "military activities essential to National security" and "the construction, operation, maintenance, and rehabilitation of Coast Guard facilities and access thereto" from the restrictions of the CBRA after consultation with the DOI. It is DOI's understanding that most military activities along the Atlantic and gulf coastlines are essential to National security. Compliance with the National Environmental Policy Act and other environmental safeguards is required of the military and Coast Guard. In addition, under the Sikes Act, the Fish and Wildlife Service works with the military to develop fish and wildlife conservation plans for their installations.

Recommendation: The DOI recommends that the military and Coast Guard lands currently included in the CBRS be deleted and that no new military or Coast Guard lands be added to the CBRS.

CONSERVATION RECOMMENDATIONS

Traditionally, the Federal role in coastal management has focused on acquisition, planning, and regulation. Enactment of the CBRA in 1982 marked a departure from this approach. In recognition of the insupportable public costs associated with development of the coastal barriers along the Atlantic Ocean and Gulf of Mexico coastlines, the Federal Government withdrew its financial support for investment in the remaining undeveloped barriers that were included in the CBRS. These costs included not only recurrent expenditure of Federal revenues, but also the loss of human lives and the destruction of important fish and wildlife resources.

To develop recommendations for conservation of the CBRS, a variety of alternatives that affect, or could affect, conservation of the CBRS, including acquisition, regulation, and tax policy, were considered by the DOI. These are discussed in detail in Volume 1. Recommendations concerning each of these alternatives follow.

ACQUISITION

The Federal Government did not originally own as much coastal acreage as it did acreage in other areas of the country. For a short time, the coasts of Florida, Alabama, Mississippi, and Louisiana were federally owned, but these were transferred to the States or private parties by the mid-1800's (Platt 1985). Federal interest did not turn towards conservation and preservation of coastal resources until relatively recent times when the Cape Hatteras National Seashore was established in 1937 (U.S. Department of the Interior 1983).

Before World War II, more than 90% of the Nation's coastal barrier real estate existed as undeveloped natural areas, largely inaccessible to the general public. Post-war development soon began to change this situation and in 1961,

Congress began to take aggressive action to protect coastal barriers with the authorization of the Cape Cod National Seashore. From 1961 through 1972, Congress established seven additional National Seashores on coastal barriers, and the U.S. Fish and Wildlife Service established 12 new National Wildlife Refuges. Since 1972, both the National Park Service (NPS) and the Fish and Wildlife Service (FWS) have continued to acquire additional lands on coastal barriers. Today, the National Park Service administers nine National Seashores along the Atlantic and gulf shorelines, encompassing about 550 shoreline miles and 400,000 acres of land. The Fish and Wildlife Service manages about 50 National Wildlife Refuges along these coastlines.

The Emergency Wetlands Resources Act of 1986 (P.L. 99-645) provides additional mechanisms for Federal acquisition of wetlands to augment the NWR system. One provision of this law authorizes entrance fees at some refuges with 70% of the receipts collected dedicated to the Migratory Bird Conservation Fund for the purchase of migratory bird habitat. A second provision authorizes an increase in the price of Federal duck stamps, which are required for hunting migratory waterfowl, and directs proceeds to be used to acquire wetlands. Both these provisions employ the user fee concept to finance wetland acquisition. Other provisions of the Emergency Wetlands Resources Act allow the monies appropriated under the Land and Water Conservation Fund (LWCF) to be used for Federal wetland purchases and for State acquisition under the related State grant program.

Although primarily established to provide beaches for recreation, State and local parks also often included substantial areas of dunes and wetlands that are effectively conserved as undeveloped open space. Acquisition programs in the Coastal States and private sector have accelerated in recent years as competition for remaining undeveloped coastal barrier acreage has intensified.

Since enactment of the CBRA, several CBRS units have been acquired for recreational or conservation purposes, including Shackleford Banks (NPS-Cape Lookout National Seashore), part of Mobile Point (FWS-Bon Secour NWR), and several areas in Florida (for inclusion in the State's park system). Acquisition, however, has been limited because of the excessive costs of acquiring prime beach real estate. It is pursued on a case-by-case basis as determined necessary by individual land-managing agencies.

Recommendation: The DOI recommends that the Federal Government continue to employ the user fee concept in acquisition of CBRS lands as appropriate. The DOI also recommends that State and local land-managing agencies as well as private conservation organizations be encouraged to pursue acquisition of CBRS lands as appropriate. If any CBRS lands become "otherwise protected" areas, the DOI recommends that they automatically be deleted from the CBRS and exempt from the CBRA's restrictions.

SURPLUS OR EXCESS FEDERAL PROPERTY

There are considerable Federal holdings on Atlantic and gulf coastal barriers not included in the CBRS. The CBRA does not address surplus or excess property

transfer of lands held by Federal agencies. These lands could be used for development if transferred to private ownership without appropriate safeguards.

Recommendation: The DOI recommends an amendment to the CBRA to require that if any Federal coastal barrier properties are determined to be surplus or excess to government needs, the undeveloped portions of such properties which the General Services Administration (GSA), in consultation with the DOI, determines are appropriate for inclusion in the CBRS automatically be included in the CBRS prior to disposal unless they will otherwise qualify for exemption under the CBRA or qualify as otherwise protected areas.

REGULATORY CONSISTENCY

Although the CBRA restricts Federal expenditures which encourage development within the CBRS, it does not prevent Federal agencies from issuing permits for activities within or adjacent to CBRS units. Several Federal agencies, including the Army Corps of Engineers, the Environmental Protection Agency (EPA), and the Coast Guard administer regulatory programs that affect coastal barriers and their associated natural resources. These programs require permits for the construction of causeways, bridges, and docks, and for many components of the infrastructure necessary for development, such as utility crossings and wastewater discharges. Some commenters expressed concern that continued issuance of Federal permits without consideration of the purposes of the CBRA works at cross-purposes with the conservation and safety goals of the CBRA and suggested that Federal permits for activities within or adjacent to CBRS units be required to be consistent with the purposes of the CBRA.

Conservation without creation of a new Federal regulatory program was one of the major tenets of the CBRA. In signing the CBRA, President Reagan stated, "The Coastal Barrier Resources Act meets a National problem with less Federal involvement, not more." Since the passage of the CBRA in October 1982, many Federal permits for various types of construction activities on or adjacent to coastal barriers in the CBRS have been issued. While these permits have authorized several different types of structures and activities, the greatest number have been issued for the construction of individual boat docks or marinas. The environmental effects of any structure and its usage must be considered during the permit review process. None of these permits indicates a direct disregard for the purposes of the CBRA.

Recommendation: The DOI finds that the major Federal permit programs that affect the CBRS--permits for dredge and fill and bridge construction--take fish and wildlife values into account. Requiring regulatory consistency at the Federal level would depart from the basic CBRA premise that conservation can be achieved without increasing Federal regulatory involvement by simply withdrawing Federal financial support for development of undeveloped coastal barriers. Furthermore, most States have additional regulatory safeguards that also serve the purposes of the CBRA. These include wetlands protection programs, construction setback requirements, and poststorm reconstruction policies to control development on barriers. Therefore, the DOI recommends no regulatory amendment.

TAX POLICY ALTERNATIVES

Over the years since the Internal Revenue Code was enacted in 1954, there was an enormous erosion in the tax base as tax-exempt actions increased. While exclusions, itemized deductions, and the deduction value of credits offset only about 18% of personal income in 1954, they offset about 34% in 1984 (U.S. Department of the Treasury 1984). Exclusions and deductions meant that tax law, along with the market, had become a major force in determining how individuals and businesses used their economic resources. In coastal communities, tax-induced distortions have had significant costs in terms of lost property, public revenues, and natural resources. A tax policy that is neutral toward development decisions on coastal barriers could foster the conservation of the fish, wildlife, and other natural resources of the CBRS by allowing development in the CBRS to be based on market signals, basically unaltered by Tax Code provisions. Based on this logic, the Section 10 study devoted considerable early effort to possible tax amendments for conservation of the CBRS.

In 1986, the Tax Reform Act (TRA) made sweeping changes in the Internal Revenue Code. A guiding principle of the TRA was the reduction of the Code's interference with the economic decisions made by individuals and businesses. The TRA changes many of the provisions in the Code that interfered with market decisionmaking. Many of these changes are essentially those initially considered by the DOI (these are discussed in Volume 1). For example, the TRA eliminates long-term capital gains deductions, limits casualty loss deductions, allows only straight-line depreciation of property over a longer time period, restricts interest deductions, eliminates investment tax credits, and imposes at-risk limitations on real estate holdings.

Because of the TRA, in the second portion of its study (after 1986), the DOI focused attention away from options that might reduce tax incentives that encourage development and towards options that might promote donations of conservation easements. As these options were investigated, the DOI was assured by the Department of the Treasury that the interpretation of the rules under Section 170 of the Internal Revenue Code--the section governing donations of conservation easements--has not adversely affected charitable contributions within the CBRS.

> Recommendation: The DOI recommends no tax amendments at this time. Several of the tax options considered for conservation of CBRS have been incorporated in the Tax Reform Act of 1986. Furthermore, the DOI is confident that there are no special problems associated with the charitable contributions within the CBRS. Having just accomplished a major reform after 2 years of debate and legislative effort, a period of stability and certainty in tax law is necessary.

OTHER AMENDMENTS TO THE CBRA

With certain exceptions, the CBRA prohibits new Federal expenditures and financial assistance for development within the units of the CBRS. Section 3(3) of the Act defines "financial assistance" as "any form of loan, grant,

guaranty, insurance payment, rebate, subsidy, or any other form of direct or indirect federal assistance." The prohibition on new Federal expenditures and financial assistance in CBRS units is broad and covers all Federal programs unless specifically exempted by the CBRA.

All exceptions to the CBRA limitations are discussed in Volume 1 of the report. Some examples include general revenue sharing, social programs, energy projects, channel and road maintenance, military activities, and Coast Guard station construction, scientific research, emergency actions, nonstructural beach stablization projects (such as beach nourishment), and fish and wildlife management activities.

Several questions have arisen as each Federal agency has attempted to assure compliance with the CBRA prohibitions. For example, can Federal monies be used to support a project that is not located in a CBRS unit but might have substantial impact on it: i.e., can a bridge to a coastal barrier be constructed with Federal revenues if it terminates outside the CBRS unit even though it might substantially improve the accessibility and, therefore, the development potential of the CBRS unit?

Section 5 Limitations

Section 5(a) prohibits Federal funding for activities within CBRS units. In several instances, Federal agencies have had to decide whether to obligate Federal funds for facilities such as wastewater treatment plants that are located outside the CBRS but whose service areas may include developments in CBRS units.

The DOI issued a decision concerning a federally funded wastewater treatment plant in Brevard County, Florida, stating that the service area could not be expanded to include the adjacent CBRS unit, and further, Federal monies could not be used to construct sewer lines through the unit to service developed areas to the south. Such a transit line could be constructed with non-Federal monies, but tie-ins within the CBRS unit would remain prohibited (see also the DOI's recommendation concerning Section 6(a)(3) in the following section).

The Federal Highway Administration (FHWA), in its CBRA implementation regulations, concluded that use of Federal funds for construction of a bridge that terminates on the same barrier, but outside a CBRS unit is allowed. However, under existing FHWA regulations, no Federal monies can be used to build a road from that bridge terminus into the CBRS unit; such a road must be funded entirely through non-Federal sources.

In the 1987 Draft Report, the DOI considered a recommendation that guidance be developed to clarify that Federal financial assistance specifically directed to a purpose within the CBRS, even if the project is located outside the CBRS, is prohibited by Section 5(a) of the Act. Upon reevaluating the situations which may arise, the DOI concludes that determinations about whether Federal financial assistance is appropriate can be made on a case-by-case basis, and therefore, makes no recommendation for general guidance.

Recommendation: The DOI recommends no changes in Section 5.

Section 6 Exceptions

Section 6 lists exceptions to the general prohibitions in Section 5(a) on Federal expenditures within the CBRS. Federal agencies must consult with the DOI (FWS) prior to obligating funds for any of the exceptions permitted. Ambiguities in the wording of several of the exceptions and different interpretations among Federal agencies have created apparent conflicts with the purposes of the CBRA.

Essential link (roads). Section 6(a)(3) allows expenditures for the repair, replacement, or reconstruction of facilities that are "essential links" in a larger network or system. Under Section 6(a)(6)(F), expenditures for the repair, replacement or maintenance of these roads, structures or facilities are allowed when the expenditure of Federal revenues will be "consistent with the purposes of [CBRA]." The Federal Highway Administration (FHWA) has declared all existing roads and highways in the Federal-aid System are usually "essential links" by definition; they are by designation important links in a larger network.

In the 1987 Draft Report, the DOI proposed eliminating Section 6(a)(3) entirely. Under this proposal, maintenance, replacement, reconstruction, or repair, but not the expansion of publicly-owned or publicly-operated roads, structures, or facilities would continue to be allowed under Section 6(a)(6)(F) only if they were consistent with the purposes of the CBRA. However, as several commenters pointed out, there are some roads that should legitimately be considered essential links, such as U.S. Highway A1A in Florida. The repair or replacement of these roads should be allowed even if it is not consistent with the purposes of the CBRA.

Recommendation: The DOI recommends no change in Section 6(a)(3).

Essential line (utilities). Because of the large recommended increase in the amount of associated aquatic habitat included in each CBRS unit, many commenters were also concerned that utilities, especially rural electric cooperatives and water and sewer companies, would not be able to service adequately customers on developed coastal barriers because they could not afford to cross the CBRS without Federal assistance. It was not the intent of the CBRA to penalize those living on developed coastal barriers, nor does the DOI want to discourage the construction or use of sewage treatment plants that will lessen the detrimental environmental impacts of malfunctioning package treatment plants and septic systems on developed barriers.

Recommendation: The DOI recommends an amendment to Section 6 to allow utilities (1) to use Federal monies for the purposes of putting in "essential lines" through the CBRS where no practicable alternative route exists to service one or more developed areas on coastal barriers outside the CBRS, and (2) to provide service to developments within the CBRS from existing lines or "essential lines" which cross through the CBRS provided that service can be supplied with no additional costs to the Federal Government. If any upgrades are necessary to accommodate such service within the CBRS, the DOI recommends that their costs be borne by non-Federal parties.

The DOI believes that the potential environmental benefits resulting from this recommendation will outweigh any potential contributions to the development of the barrier. Once the original Federal outlay for the "essential line" is made, it is the DOI's intent that no additional Federal costs result from allowing tie-ins.

Dredged material disposal. Section 6(a)(2) allows dredged materials to be disposed within the CBRS after consultation with the DOI, but without special consideration for the purposes of the CBRA. In the 1987 Draft Report, the DOI considered a recommendation that Section 6(a)(2) be amended to require dredged material disposal to be performed in a manner consistent with the purposes of the CBRA; however, this proposal runs counter to the basic CBRA premise that conservation can be achieved without increasing Federal regulatory involvement. Dredged material disposal is already regulated by Federal programs that take fish and wildlife values into account.

Recommendation: The DOI recommends no change in Section 6(a)(2).

Recreational project. Section 6(a)(6)(A) clearly allows fish and wildlife management and conservation to occur within the purposes of the CBRA. However, several States have raised questions regarding the extent of allowable outdoor recreation and have requested that if otherwise protected areas continue to exist in, or are added to the CBRS, then this section should be clarified to allow outdoor recreation, so long as it complies with the purposes of the CBRA. However, the DOI is not recommending that otherwise protected areas remain in or be added to the CBRS. This should alleviate the States' concerns without requiring any changes in Section 6(a)(6)(A).

Recommendation: The DOI recommends no amendment to Section 6(a)(6)(A).

Federal Agency Compliance and Block Grants

Particularly difficult to oversee is the prohibition against block grants related to development, such as the Community Development Block Grant Program. Such programs often involve no-year appropriations that give broad discretion to State and local governments. Such Federal expenditures could, if not carefully monitored, inadvertently be used for development of CBRS units.

Recommendation: The DOI recommends no amendment to address block grants. The DOI believes most agencies have incorporated compliance with the CBRA into regular program activities. For instance, the Department of Housing and Urban Development requires recipients to comply with the purposes of the CBRA. The benefits derived from amending the law to require Federal agencies responsible for disbursing Federal funds to States and localities to establish coordinated tracking systems to monitor and assure compliance with CBRA would be outweighed by the costs of implementation.

Section 7 - OMB Certification

Section 7 requires the Director of the Office of Management and Budget (OMB) to certify annually in writing, on behalf of each Federal agency concerned, that each such agency has complied with the CBRA during the preceding fiscal year.

In compliance with this provision, the Director annually certifies that each Federal agency has certified to him that it is in compliance with the CBRA. This certification process is administratively cumbersome, and OMB does not have the capability required to audit agency expenditures. Therefore, in the 1987 Draft Report, the DOI proposed that Section 7 be deleted from the CBRA. Many commenters objected to this and some suggested that the certification requirement be transferred to the General Accounting Office, which can conduct audits.

Recommendation: The DOI recommends that Section 7 be amended to require each Federal agency to self-certify that they have complied with the provisions of the CBRA during each fiscal year, and submit notice of that certification to Congress on an annual basis.

CONSERVATION OF ATLANTIC AND GULF COASTAL BARRIERS: THE NEXT STEP

Several noted coastal experts have predicted that the general trend of deterioration along the entire Atlantic and Gulf of Mexico coastline will continue as long as the Federal Government continues to support development and post-storm reconstruction on those coastal barriers (approximately 1/3 of the Atlantic and gulf coastline) not included in the CBRS or protected by Federal, State, or local entities. Preliminary reconnaissance indicates that those units of the CBRS that were experiencing heavy development pressure prior to enactment of the CBRA have continued to develop regardless of the loss of Federal financial support.

The DOI has noted and does not disagree with the commenters who raise "equity" questions concerning the application of the CBRA to only undeveloped coastal barrier areas. There are many coastal areas outside the CBRS that are either developed or are not qualified for inclusion in the CBRS under DOI criteria which may continue to receive Federal funding for both new development and redevelopment after storms. Continued Federal assistance in these areas raises equity questions among those who were denied such assistance when their property was included in the CBRS. Other commenters argue that the expenditure of Federal funds in all high-hazard coastal barrier areas is "wasteful" or not cost effective.

In developed coastal areas that have experienced hurricane damage since 1982, for example, there is ample evidence of reconstruction and, in most cases, growth despite the continued threat of future storms. In the City of Galveston, the annual rate of new construction grew from $30 million in 1982 prior to Hurricane Alicia to over $150 million in 1985 (Miller 1985).

Sea-level rise is another factor that will continue to be responsible for predictable barrier shoreline losses. Worldwide sea level has risen 4 to 6 inches in the last century, but because most of the Atlantic and gulf coast in the United States is also slowly subsiding, the apparent rise in sea level relative to most of the shoreline is even greater: about 1 foot in the last century (Hicks et al. 1983). Many scientists expect the rate of sea-level rise to continue to increase because of the increases in atmospheric concentrations of carbon dioxide and other "greenhouse gases." The EPA and the National

Academy of Sciences have estimated a 3- to 5-foot rise in sea level along the U.S. coast over the next century (Revelle 1983; Hoffman et al. 1983).

The physical effects of sea-level rise include inundation of wetlands and other low-lying areas, beach erosion and barrier island overwash, and higher storm surges. Recent studies by the EPA estimate that 50% to 85% of coastal wetlands could be lost if sea level rises as projected (Kana et al. 1986; Titus 1985). To a large degree, they note, the loss in wetlands will depend on whether development prevents new wetlands from forming further inland.

The impact of sea-level rise on coastal erosion has been well documented. Bruun (1962) showed that a 1-foot rise in sea level will erode the typical sandy beach 100 to 500 feet. For developed coastal barriers, the projected rise in sea level will dramatically increase the necessary level of expenditures for beach nourishment and stabilization projects.

During the 1970's, major environmental problems associated with the juxtaposition of developed and undeveloped areas became progressively more apparent and widespread. As the rapidly urbanizing areas began to place demands on entire natural ecosystems, impacts occurred outside the developed areas themselves. Pollution of shellfish beds has become widespread, especially on Long Island's south shore, but also locally in Massachusetts, New Jersey, Florida, and elsewhere. Offshore municipal dumping is threatening public recreational use of the beaches. Sewage and industrial pipeline effluents are contaminating nearshore habitats. Structural projects to maintain recreational beaches, prevent undermining of oceanfront buildings, and stabilize inlets are causing accelerated erosion and adverse ecological effects in the vicinity of the projects and in the areas immediately downdrift of the structures. Where urbanized areas are located immediately updrift from protected areas, efforts to protect development and the growing economic base in the urban area conflict with the requirements for perpetuating the nearby natural area.

If planning for sea-level rise and grappling with the pressures of developed areas on fragile ecosystems are difficult problems, defining a policy towards reconstruction in coastal areas following major storms or hurricanes poses an equally arduous challenge. There is ample evidence to show that Federal subsidies support reconstruction, often increasing the Federal investment in coastal communities that experience repeated destruction by storms. Conservation of coastal resources could be enhanced and Federal involvement in the costs associated with coastal redevelopment could be reduced if the purposes of the CBRA were taken into account by Federal decisionmakers involved in coastal reconstruction following storms or hurricanes. The existing policy of simply replacing the structures that have been damaged or destroyed does not consider the special risks associated with development on coastal barriers. Additional efforts in public education could also help coastal barrier residents and government officials make these difficult decisions in an informed manner.

Coastal geologists, ecologists, engineers, lawyers, economists, and environmental managers expressed concern about coastal barrier development, sea-level rise, and the country's eroding shorelines during two 1985 conferences ("Cities on the Beach - Management of Developed Coastal Barriers" in January 1985, and "Second Skidaway Institute of Oceanography Conference on America's Eroding

Shoreline: National Strategy for Beach Preservation" in June 1985). Both conferences wrestled with the increasing problem of development or stabilization on one portion of a barrier negatively affecting the adjacent undeveloped beaches up or down the barrier. Both also advocated a policy of retreat from the shoreline and an end to all direct and indirect Federal expenditures in support of private coastal development.

Recommendation: The DOI recommends that the Congress enact legislation directing that a joint study be undertaken by the DOI, the Department of Transportation, the Department of Commerce, the Department of Agriculture, the Army Corps of Engineers, the Environmental Protection Agency, and the Federal Emergency Management Agency, in consultation with the States, to develop additional options to address Federal subsidies on all coastal barrier areas, both developed and undeveloped, for consideration by Congress.

Consideration should be given to options such as guidelines on which Federal agencies could base decisions concerning redevelopment or reconstruction of coastal barriers following major storms (in response to conservation questions), a phase out of Federal expenditures throughout all coastal barrier areas (in response to equity questions), and other alternatives. For example, the Study Group could consider a Federal/State cost-sharing approach as follows: 75:25 during the first 5 years, 50:50 for the next 10 years, and 25:75 during the last 5 years which would result in a total prohibition of Federal subsidies on all coastal barrier areas after 20 years. As variations, this approach could be applied to new development outside the CBRS or redevelopment only. This joint study should be carried out in recognition of the many comments received concerning the equity of applying the prohibitions only within the CBRS and the continuing subsidization of development on coastal barriers outside the CBRS.

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Table 1. Summary of public comments received on the March 1987 Draft Coastal Barrier Resources System: Report to Congress. More than 6,150 individuals expressed opinions on the 1987 Draft Report by letter or petition. This table does not include the comments on individual CBRS units.

Issue	For DOI Position in 1987 draft report	Against DOI position in 1987 draft report	Change in DOI position in final report
ADDITIONS TO OR DELETIONS FROM THE CBRS			
Geographic Scope			
Expansion in general	891	98	none
Add Florida Keys	452	19	modified recommendation
Add Puerto Rico and U.S. Virgin Islands	356	0	none
Other Coastlines-Further Study	9	705	clarification added
Add Associated Aquatic Habitat	333	2	additional recommendation
Add Secondary Barriers	358	6	none
Otherwise Protected Barriers			
Delete in existing CBRS and exclude	6	92	none
Automatic inclusion if made available for development	36	1	modified recommendation
Include inholdings	40	2	modified recommendation
Exclude Military and Coast Guard Lands	5	464	clarification added

(continued)

Table 1. Concluded.

Issue	For DOI Position tion in 1987 draft report	Against DOI posi-sition in 1987 draft report	Change in DOI posi-tion in final report
CONSERVATION RECOMMENDATIONS			
Aquisition by User-fees	8	0	none
Add Excess Federal Property	8	0	none
No Regulatory Amendments	4	11	none
No Tax Amendments	5	1	none
OTHER AMENDMENTS TO CBRA			
Add Section 5 Guidelines	30	6	modified recommendation
Section 6 Exceptions eliminate 6(a)(3)-essential link	34	4	modified and additional recommendation
6(a)(2)-dredge disposal only if consistent	41	1	modified recommendation
6(a)(6)(A)-no recreational projects amendment	30	4	clarification added
No Block Grant Monitoring	28	3	none
Eliminate Section 7-OMB Certification	1	40	modified recommendation
JOINT STUDY OF RECONSTRUCTION ALTERNATIVES	28	4	modified recommendation

Table 2. State and Territory positions on DOI Proposed Recommendations in the March 1987 Draft Report to Congress. + = for DOI recommendation, - = against DOI recommendation, o = no comment.

	ME	MA	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA	FL	AL	MS	LA	TX	PR	VI	No. States for DOI Position	No. States Against Position
CBRS ADDITIONS AND DELETIONS																					
Geographic Scope																					
Expansion in General	+	+	+	+	+	+	+	+	+	+	+	-	+	o	+	o	-	-	+	14	3
Add Florida Keys								+					+		+					3	0
Add Puerto Rico & Virgin Islands								+							+			-	+	3	1
Other Coastlines-Further Study	-				-									-	+					1	3
Add Associated Aquatic Habitat	-		+	+	-		+	+		+			+		+		-			7	3
Add Secondary Barriers			+	+			+	+		+				-	+					6	1
Otherwise Protected																					
Delete in existing CBRS and exclude	-	-	-	-	+		+			-					+		+			4	5
Automatic inclusion if develop					+		+	+							+					4	0
Include inholdings					+		+	+							+					4	0
Exclude Military & Coast Guard lands		-			-					-					+					1	3
CONSERVATION RECOMMENDATIONS																					
Acquisition by User-fees		+			+		+							+	+					5	0
Add Excess Federal Property		+			+										+					3	0
No Regulatory Amendments		+		-	+		+							+	+					5	1
No Tax Amendments	-	+				-									+					2	2
OTHER AMENDMENTS																					
Add Section 5 Guidelines		+			+		+	+							+					5	0

(continued)

Table 2. Concluded.

	ME	MA	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA	FL	AL	MS	LA	TX	PR	VI	No. States for DOI Position	No. States Against Position
Section 6 Exceptions																					
eliminate essential link		+			-		+	+					-		+					4	2
dredge disposal if consistent		+		+	+		+	+							+					6	0
no recreation projects amendment		+	-	-			+								+					3	2
No Block Grant Monitoring		-					-								+					1	2
Eliminate Section 7 - OMB Certification		-					-						-		+					1	3
JOINT STUDY OF RECONSTRUCTION ALTERNATIVES		+	+		+	+	+	+						+	+					8	0

Table 3. Summary of recommendations for changes in the CBRS.

State	Number of existing CBRS units	Number of units with recommendations	Shoreline length in CBRS (miles)	Shoreline length with recommendations (miles)	Total acreage in CBRS	Total acreage with recommendations	Fastland acreage in CBRS	Fastland acreage with recommendations
Maine	12	25	10.0	22.5	1,045	4,640	485	1,005
Massachusetts	44	60	70.7	119.3	17,214	66,290	3,871	6,904
Rhode Island	11	20	17.7	25.7	4,791	8,851	1,058	1,436
Connecticut	11	15	8.2	7.5	3,045	3,741	333	302
New York	12	42	21.0	45.0	4,635	18,399	1,131	1,965
New Jersey	0	8	0	13.5	0	5,486	0	396
Delaware	2	4	17.1	17.5	1,565	6,945	517	740
Maryland	0	36	0	28.0	0	7,163	0	1,605
Virginia	4	52	13.8	80.5	11,298	52,831	1,148	3,479
North Carolina	8	6	54.6	32.6	31,913	29,741	8,610	4,579
South Carolina	13	14	38.4	42.4	26,885	76,130	4,511	4,586
Georgia	6	6	16.2	19.9	33,073	64,255	5,126	5,506
Florida	33	65	118.8	172.4	61,575	305,200	19,378	39,511
Alabama	3	4	17.6	19.0	10,678	11,058	2,940	2,722
Mississippi	4	6	9.6	12.8	4,309	5,981	557	662
Louisiana	12	17	91.7	180.0	59,243	353,340	4,518	12,747
Texas	11	19	161.0	180.0	181,565	199,401	46,751	48,498
Puerto Rico	0	42	0	56.9	0	21,486	0	2,473
Virgin Islands	0	20	0	13.4	0	2,740	0	587
TOTAL	186	461	666.4	1,088.9	452,834	1,243,678	100,934	139,703